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## 'Self-Efficacy Beliefs' in a Study of Academic Writing? An Investigation Into the Potential Usefulness of Bandura's Notion of 'Self-Efficacy Beliefs' for an Exploration Into the Relationships Between Five Women's Beliefs and Feelings About Their Writing Practices and Experiences in a Research Course in a UK Based University

### Thesis

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An investigation into the potential usefulness of Bandura's notion of 'self-efficacy beliefs' for an exploration into the relationships between five women's beliefs and feelings about their writing abilities and their writing practices and experiences in a research course in a UK based university

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**ABSTRACT**

This dissertation reports on a study aiming to explore the writing related beliefs and feelings of five women who are in the first year of a research qualification in a United Kingdom (UK) university. The study used a context rich methodology drawing on principles from ethnography and linguistics to explore the writing related beliefs and feelings of the women in the study through the lens of 'self-efficacy beliefs'. 'Talk-around-text' interviews, which draw on the participants' research-related written texts, are used to foreground the participants' beliefs and feelings about their writing abilities. In addition, data in the form of a series of entries from personal 'writing diaries' are drawn on to provide information related to the participants' beliefs and feelings about writing abilities while a written text is being worked on in the home. The study suggests that while Bandura's notion of 'self-efficacy beliefs' facilitated an analytic gaze that foregrounded the participants' beliefs and feelings about their writing abilities, the notion was limited because it did not account for other contextual features that frame writing, like the effects of finances, time or the physical environment.

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## **1 Aims and Objectives**

### **1.1 Introduction**

This dissertation draws on a pilot research study to investigate the writing experiences of five women who are postgraduate, student-researchers at the beginning of a research-related university course in a United Kingdom (UK) based university. The participants are at the beginning of a research qualification and are currently enrolled in one of the following courses: a Master in Research, a Doctor of Philosophy or a Doctorate of Education.

My intention is to explore these women's experiences of writing research and their beliefs and feelings about their abilities as writers in order to get a sense of the role these beliefs and feelings might have in their Higher Education (HE) writing. For the purposes of this project these beliefs will be conceptualised within Bandura's notion of 'self-efficacy beliefs' (Bandura 1986, 1989, 1997) as a key goal of this dissertation is to explore critically the potential of the notion of 'self-efficacy beliefs' in a writing-focused investigation.

The term efficacy is widely used in technical and medical contexts to refer to an individual's, or an object's, ability to bring about effects in particular contexts. For example, discussions occur in psychology and other specific medical contexts about the 'efficacy' of particular treatments and interventions.

Derived from this term is the notion of 'self-efficacy beliefs' which are used within psychology to refer to people's beliefs in their own abilities in specific contexts. This concept is discussed in more detail in the Key Concepts and Definitions section of this thesis. As mentioned, this paper will be exploring the potential usefulness of this specific concept for a study into the writing practices and experiences of five women who are studying research.

My background in educational psychology within teacher education in Australia combined with my more recent teaching experiences in English language and academic literacies' education in a variety of local and international contexts led me to think about the potential usefulness of a notion like Bandura's 'self-efficacy beliefs' in a study of academic writing. It was the everyday experiences I had with adult students in these 'writing-related' education contexts that informed the 'foreshadowed problem' (Malinowski, 1922, p.7) that I brought to the research. This problem concerned the

relationships I saw between people's thoughts and feelings about their abilities as writers and their actual writing practices and experiences. I was also interested in the social contexts within which these feelings and beliefs evolved because of the influence different social contexts appeared to have on both people's beliefs and feelings about writing and their writing practices and experiences. As a result, a desire to find ways to investigate these areas has informed the methodological choices I have made throughout the project. In addition, as my interest into this area has deepened, so has an interest in the experiences of women in higher education (HE), particularly those women who believe that writing presents specific tensions for them in HE.

Consequently, the research and dissertation is premised on the following working hypothesis:

1. That people's beliefs and feelings about their abilities as writers affect their writing practices and experiences.
2. That people's writing-related beliefs and feelings are affected by social contexts.

## **1.2 Goals of the Project**

The goals of the project are:

1. To talk to women at the early stages of a HE research qualification specifically about their experiences of writing.
2. To reflect on the effects of the participants' beliefs and feelings about writing on their writing activities and experiences.
3. To test the usefulness of Bandura's notion of 'self-efficacy beliefs' in a study of academic writing and to consider the study as a pilot for a larger project within a PhD.

## **1.3 Research Questions**

The main research questions framing the research and this literature review are:

1. What are the relationships between the participants' beliefs and feelings about writing, as seen through the lens of Bandura's notion of 'self-efficacy beliefs', and their research-related HE writing practices and experiences?

2. What are the strengths and limitations of Bandura's notion of 'self-efficacy beliefs' in a study of academic writing?
3. Specifically, what are the strengths and limitations of this notion in relation to women?

#### **1.4 Rationale for a Focus on Women**

There are three themes that form my justification for researching women's writing and women's experiences in HE, and explain why, in my view, women's experiences within HE continue to be an important focus for research. The first theme relates to the smaller number of women studying research in the UK compared to men. The second theme refers to discussions around the types of knowledge and meaning-making that are valued in HE. The third concerns specific ethical arguments related to research investigating women's experiences. These themes are expanded on below.

Admittedly, there are currently more women than men in undergraduate HE in the UK. According to the Universities and Colleges Admissions Service's (UCAS) latest statistics, more women were accepted into undergraduate degrees in the UK in 2010 (54.8%) – see Appendix A. This trend has remained fairly consistent for the last five years - which leads to the inevitable question: Why women?

Firstly, gender participation within UK HE differs markedly when other variables are taken into account, like subjects and specialisms and pre and post 1992 universities (Leathwood & Read, 2009, p. 33-36 & p. 58 & 59). For example, Leathwood and Read's analysis of 10 universities at both ends of rankings within the 2008 'Good University Guide' suggests that women were more likely to be enrolled in undergraduate degrees in post 1992 HE institutes than in pre-1992 universities in the UK. More specifically, <sup>1</sup>62.52% of the 'UK domiciled women undergraduates' in the 2006/2007 academic year were in the 'bottom 10' universities of the 2008 Good University Guide's league table, while 50.62% were in undergraduate degrees in the 'top 10' universities in this league table (Leathwood & Read, 2009, p. 59). Leathwood and Read (p. 57) also point out that 'pre-1992 and elite universities' are most often found at the top of these league tables and that the 'post 1992 institutions are clustered in the lower end' and this is the case for the Good University Guide rankings cited here.

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<sup>1</sup> The percentages expressed here are reported in Leathwood and Read (2009, p. 58) as the 'mean % of UK women undergrads'.

Secondly, gender differences in Science, Technology, Engineering and Manufacturing (STEM) in HE in the UK are visible. The Higher Education Statistics Agency's (HESA) website discusses the current gender related subject-dependent trends in UK universities (with reference to the whole 2009/2010 student population):

...Subject areas with a low proportion of females included architecture, building and planning (31.0%), computer science (18.3%) and engineering and technology (16.3%).

(Source: HESA, 2011)

Most significantly for this specific project, though, despite the apparent improvement in the overall number of women studying in HE, there are still fewer women in research-related courses (not postgraduate taught courses) in UK universities. In the 2009/2010 academic year in the UK, HESA reports that: 48.7% of UK domiciled research students were women; 47.3% of research students from other European Union (EU) countries were female; 41.6% of research students from 'non-EU' countries were women (HESA, 2011). See Appendix B for a HESA graph that demonstrates this trend.

At a time where the number of women studying in HE is so widely cited (for a discussion of the 'myth' of the feminisation of the academy see Leathwood & Read, 2009) these figures raise questions about: equality in research programmes; equality of access to particular subject domains and traditions, and equality in research-related professional roles and occupations. These issues are being engaged with by the Higher Education Funding Council for England (HEFCE) which has developed issue papers for both the 5th and 6th Research Assessment Exercises (RAE) held in 2001 and 2008<sup>2</sup>.

The RAEs were carried out in order "...to produce quality profiles for each submission of research activity made by institutions" (RAE, 2011). These issue papers focus on the selection of staff for inclusion in the RAE because of the way in which this process may have an impact on individual careers in the academy. In 2009, HEFCE (p.15) published the following (Table 1):

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<sup>2</sup> The RAE is now known as the Research Excellence Framework.

**Table 1 Selection Rates for Staff Pools by Gender for the 2008 Research Assessment Exercise**

Selection rates for staff pools by gender for the 2008 Research Assessment Exercise

Gender	Permanent academic staff				Grade-identified staff		Contract-identified staff	
	Eligible		Eligible		Eligible		Eligible	
	staff	Selected	staff	Selected	staff	Selected	staff	Selected
Women	26,175	48%	58,325	28%	32,895	43%	25,300	53%
Men	47,140	67%	83,495	45%	55,550	63%	47,400	70%
Total	73,310	61%	141,820	38%	88,445	56%	72,700	64%

**Notes:** All data tables have had entries rounded to the nearest five. This may cause discrepancies between the reported total and the sum of its parts. In addition, the figures exclude non-submitting 'units of assessment' (UOA) and higher education institutes (HEI).

As can be seen from the main category on Table 1 'all academic staff' (the other categories are subsets of this one) there is a difference in the selection rate of men and women in the 2008, RAE: 45% of men were selected compared with 28% of women (HEFCE, 2009, p. 8 & 9). HEFCE's conclusions state that they believe it is not so much a "bias in the selection process" that accounts for these differences but may be as "...a result of deeply rooted inequalities in the research careers of men and women" (2009, p.25).

It is for these reasons that continuing to engage with research related to women in academia is important. Why, if there are more women than men studying in universities, are they under-represented in research courses and in staff selection processes like the 2001 and 2008 RAE s? What is it exactly that is unequal about 'doing research' at least in terms of the research outcomes that are most visible and 'valued' in assessment activities like these? And if women wish for greater access to research and perhaps more competitive publication records (for example) to enable them to have a stronger chance of selection for the RAE what are the factors that might enable them to do so? And, importantly, what are the factors that might restrict, or have been restricting, this level of participation in this very 'visible' area of academia? While I acknowledge that it is not possible for this research to cover all of these questions, I am interested in the kinds of obstacles that may be present for women who are entering research particularly with regard to their writing. What are the institutional and social factors which may be influencing the writing practices and experiences as well as the beliefs and feelings that women have about their own abilities as writers?

The second related consideration concerns discussions about what is considered to be 'knowledge' in HE and how these understandings are measured and represented. Some

academics draw attention to the gendered dimensions of what is considered 'valuable' in many academic (and writing) contexts, as well as the ways in which women are represented in research and as researchers. For example, Ann Oakley, an academic in the social sciences, has conducted empirically focused research on women's lives since the early 1970's and has challenged the way in which sociology has overlooked the very practical and economically important roles of women in society (Oakley, 2005, p. 189 - 205). Oakley draws attention to the fact that many empirical measurements within sociology hinge on men, or a 'family unit' tied to measurements of men's socio-economic status in a household. She has argued that this is biased and makes women's experiences invisible (2005, p. 190 & 191):

...it should in theory be possible to chart the areas in which women are most invisible. The procedure would be to identify discrepancies between the extent to which women are studied in each subject area, and their actual role in the social sphere of social life that the subject category represents... Using such a critical procedure, two indices could be constructed: an index of women's *sociological visibility* and an index of their *social presence*.

(Oakley, 2005, p.191)

Reay (2000) drawing on Oakley's earlier work (1995) examines the types of roles that women are undertaking in academia. Reay argues that in many cases, working class women in Britain who are working within academia are given short term contracts in research-assistant type roles and often struggle for permanency and formal recognition. In terms of how meaning-making is actually carried out in these contexts, Reay argues that working class women are often perceived as doing the 'fieldwork' or 'leg-work' in research while other academics, with formal, full-time status, for example, do the 'thinking'. Reay also reflects on the tensions that surface when these research activities are treated as separate entities.

In the context of this rationale it is also important to include a brief discussion into the ethics of focusing on women. During my own application for ethical approval I was asked to comment on the ethics of conducting a gendered study.

I responded to this query about ethics by explaining it was in a constructive spirit with which the project sought to target women. I also explained that I recognised male students would, no doubt, benefit from research into academic literacy research targeted

specifically at men. However, in terms of the resources available, it was not within the scope of the research project to respond to this demand (for examples of research that is male or masculinities focused and aims to investigate men's participation in education see Archer, Pratt & Phillips, 2001, and Kahn, Brett & Holmes, 2011, for a discussion on the 'boy-turn' in school level literacy education in the US and Australia see Weaver-Hightower, 2003). Finally, I suggested that in a context of widening participation (WP) in UK HE, it could only be beneficial for staff and students to have a knowledge and understanding of the challenges faced by all groups in contemporary HE.

At this stage I would also like to briefly comment on the fact that the letter of invitation to participate in this research<sup>3</sup> encouraged responses from women who some might classify as 'non-traditional' students in a context of widening participation in UK Higher Education<sup>4</sup>. However, I would like to acknowledge that 'non-traditional' is a highly contested term and one which is interpreted in many different ways (see Hoare and Johnston, 2011, p.23-25 for a description of the British WP context and an explanation of the ways in which UK universities' administrations select students from WP backgrounds - and how this process is specific to each university and often dependent on '...academic staff members acting as departmental and faculty admissions officers...' - p.24). In addition, I believe that by using the term, I risk positioning the participants as 'outsiders' or as 'unusual' and this is not something that I believe to be true in many contexts in contemporary HE in the UK. However, from talking to the participants, I do believe that for some, their journeys into research presented unique challenges - in terms of their writing, and that by investigating their writing practices and experiences, as well as their beliefs and feelings about writing, something may be learned from their stories.

Consequently, I was particularly interested in the experiences of women who had not entered full-time UK undergraduate education straight after high school with A Levels. This meant that they may have worked before starting university; completed a university entrance course or studied in a different country before studying research in the UK. As a result, only one of the women participating in the study had completed A levels in the UK and entered undergraduate education straight after this point. Two of the women had studied in different countries before studying research in the UK; one had left secondary school at sixteen in the UK and worked for an extended period of time (taking business related courses during that period) before returning to undergraduate studies later in life -

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<sup>3</sup> See Appendix E for a copy of the letter of invitation sent to participants.

<sup>4</sup> See Section 3.2 of this thesis which describes how some Academic Literacies' researchers have been interested in the experiences of students from so-called 'non-traditional' background in the context of Widening Participation in the UK.

at the age of 54); and, finally, one participant had had a post-school 'study trajectory' that mainly consisted of taking modular-type courses while working full-time. These courses were directly related to her full-time profession in the health sector and usually supported by her employer.

The following section of this thesis, the 'Key Concepts and Definitions' section, will define two key concepts within the thesis: 'academic literacy' and 'self-efficacy'.

## 2. Key Concepts and Definitions

### 2.1 Academic Literacy

The Review of the Literature in this thesis (section 3) discusses a specific academic literacies' theoretical and empirical research tradition upon which my approach is founded. However, I would like to signal early that a particular conception of *academic literacy* which acknowledges the social and cultural contexts as well as the practices that constitute literacy-related events informs my use of the term. Similarly, it is important to acknowledge work that challenges some of the more 'traditional' and 'mainstream' academic literacy practices currently valued within HE assessment and pedagogy. I will conclude this section by explaining what is meant when 'writing' is referred to in this thesis.

Barton (1994, p.37) drawing on the work of Scribner and Cole (1981) and Street (1984) uses the notion of *literacy practice* to signal the ways in which 'social practices' and 'common patterns' become attached to particular literacy activities and the way in which 'cultural knowledge' informs these activities. It is this fundamental framing of literacy which shapes the way the term is used within this thesis.

In addition, in order to signal that literacy practices occur in diverse contexts and are activities that have different forms and modalities, some literacy theorists discuss literacy in terms of: 'multimodality' (see for example, Kress, 2003); 'multiliteracies' (see for example, the New London Group, 1996; Kalantzis, Cope & Harvey, 2003) and 'digital literacies'. For example, Goodfellow's (2011) critical review of the literature around the 'literacies of the digital' (p.131) claims that the use of new technologies has had a 'transformative' effect on literacies in HE because of the way in which engaging with these technologies has forged connections between HE institutions and other 'professional, occupational and lifelong learning communities' (2011, p. 140). Goodfellow's review draws attention to the importance of literacy scholars finding new ways to engage



'critically' with the new 'transformed pedagogy of digital literacies' (p. 140) but this paper does not address what this might mean in practice.

In terms of challenging the boundaries of 'traditional' literacy practices, Lillis' work on 'textual juxtaposition' is significant (forthcoming, 2011). She draws attention to the 'interim' and 'limited' nature of many mainstream academic publications in terms of the time and space in which they are undertaken as well as the kinds of 'understanding' and experiences that can be conveyed via texts that value 'monologic textual unity' (p.23). Lillis experiments by using 'textual juxtaposition' in an academic article thereby demonstrating how academic texts can be more dialogic in nature. Lillis' work illustrates how change could manifest within 'traditional' HE literacy practices and draws attention to the importance of beginning to engage with these possibilities.

Finally, I would also like to make clear that I recognise prior research, at many different levels of literacy-related inquiry, has established close and fundamental, links between reading, writing, speaking and listening – oral and written literacy activity. An examples of research that explicitly explore these kinds of connections can be seen in Mann (2000) who undertook a reading focused study set within UK HE. Her study was aimed at demonstrating the importance of engaging with student-readers' personal histories and the socio-cultural and political contexts of reading activity. In addition, Maybin and Moss (1993) propose an approach to reading which includes a consideration of the fundamental relationships between talk-around-text and the 'act of reading'.

Therefore, academic literacies are dynamic literacy practices embedded in social contexts. In addition, although writing is the focus of this project, I also recognise that it is a practice that is intimately linked to listening, speaking and reading. Finally, I acknowledge that some 'traditional' writing practices within HE are being contested, and that new ways of expressing one-self in academic contexts are being explored.

## **2.2 Self-Efficacy Beliefs**

The introduction of this thesis explains that its intention is to test the usefulness of Bandura's notion of 'self-efficacy beliefs' for a study into academic writing. Below, I have outlined how Bandura defines his concept in more detail and describe the sources he claims inform and shape his 'self-efficacy beliefs'. The different domains and disciplines that utilise Bandura's 'self-efficacy' construct will also be briefly introduced and this specific research project into student writing will be positioned within this wider context. I will conclude by suggesting there may be connections between Bandura's notion of 'self-

efficacy beliefs' and the significance of 'writer-identity' within 'student meaning making' (as conceptualised by Lillis, 2001, who drew on Ivanic, 1995, Clark et al. 1990 and Fairclough, 1992).

Bandura's notion of 'self-efficacy beliefs' claims to highlight the effects of the beliefs people have in their own abilities. He calls these beliefs 'self-efficacy beliefs' (1989, 1996), but he also uses the term 'perceived self-efficacy' (1993). They are used to refer to slightly different dimensions of his framework (Bandura, 1994): 'Perceived self-efficacy' is used to emphasise matters to do with the level of 'control' people feel they have over their lives because of particular 'capabilities' while the term 'self-efficacy beliefs' is intended to foreground people's actual beliefs.

In a more detailed explanation of Bandura's hypothesis, it is also important to make reference to the fact that Bandura claimed he was not concerned with 'skills' per se but with people's perceptions of their capabilities, 'perceived self-efficacy as a notion concerned with judgements of personal capability...not the number of skills (one has)' (1997, p.11). I will reflect on how useful this distinction is within the Interpretations and Findings of this thesis.

To date, much of the work that has been done that investigates Bandura's notion of 'self-efficacy beliefs' has been carried out in psychology most particularly in educational psychology and academic and learning contexts. Other related areas include sports psychology and athletics, writing, maths and numeracy, career developments and career trajectories and the effects of parenting styles. Recently a study has been carried out which aims to explore the concept in an inter-cultural context (for critical reviews of the application of 'self-efficacy beliefs' in academic-related studies see Usher & Pajares, 2008 and Zimmerman & Schunk, 2011).

Specific approaches to research using Bandura's proposed framework have often assumed methodological approaches that are grounded in traditional psychology. These include both experimental and non-experimental research designs (Schunk & Usher, 2011).

Qualitative studies have also been conducted which utilise Bandura's proposed construct. They are considered to be important additions to 'self-efficacy' research because they allow for the different ways individuals make meaning from experiences to be foregrounded and have the potential to provide details about how 'self-efficacy beliefs' have evolved in individuals. Usher and Pajares' (2008) critical review of the literature related to the sources of 'self-efficacy beliefs' draws attention to the need for more qualitative research related to Bandura's 'self-efficacy' construct:

Qualitative investigations hold great promise for providing a rich understanding of the genesis of students' self-efficacy beliefs, as they have the potential to describe the heuristic techniques students use to attend, to weigh, and appraise the degree of influence the sources have on their self-efficacy beliefs...(p. 784)

I am interested in exploring the potential for Bandura's notion of 'self-efficacy beliefs' in a similar way, i.e. in a predominantly qualitative study that has the potential to explore the life-stories and 'heuristic techniques' that relate to people's experiences of writing in HE.

Finally, it is important briefly to introduce what Bandura hypothesises the four 'sources' (Bandura, 1994, 1997) of 'self-efficacy beliefs' are and to outline the reasons why he proposes 'self-efficacy beliefs' are significant. The sources of 'self-efficacy beliefs' are mastery experiences (which refers to people having had experiences of success in particular domains); vicarious experiences (which suggests social influences and models have a role in shaping beliefs about particular 'activities'); forms of social persuasion (which suggests specific kinds of feedback and social interactions inform 'self-efficacy' beliefs about specific activities); and emotional and physiological states (which suggests affective and physical reactions can inform 'self-efficacy beliefs'). Figure 1, below, outlines these four sources:

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#### **Sources of Self-Efficacy Information**

Mastery experiences  
 Vicarious experiences  
 Forms of social persuasion  
 Emotional and Physiological indexes

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#### ***Figure 1. Sources of Self-Efficacy***

(Source: Bandura, 1994,1997)

It is the drawing together of social contexts with affective and physiological contexts which may make Bandura's model potentially useful in a study of writing. This is to say that his notion of 'self-efficacy beliefs' may be able to act as a kind of lens through which the effects of both the social and emotional contexts of HE writing can be reflected upon. In addition it may prove to be a useful resource because the construct is self-referential (in the sense that participants are asked to identify their own feelings and beliefs and these are taken at face value); and parallels can be seen here in the way the 'emic'

perspective in ethnography is valued (see Lillis, 2008, p. 360 & 361 for a more detailed discussion of the emic and etic tensions in text-oriented ethnography).

I would like to conclude this section by drawing attention to the fact that there are a number of established ways of theorising about beliefs and attitudes related to writing in some critical linguistic and discourse analysis research traditions. These include the notions of 'writer-identity' (see for example, Ivanic, 1995; Clark & Ivanic, 1997; Lillis, 2001) and 'Voice' (see for example, Hymes, 1996; Blommaert, 2005 ). I would like briefly to suggest that there are possible connections between the role of 'writer-identity' within 'student meaning-making' (as conceptualised by Ivanic, 1995 & 1998; Lillis, 2001) and the ways in which I seek to explore the potential of Bandura's notion of 'self-efficacy beliefs' in a study of student-writing.

Lillis (2001, p. 49-51) developed a useful heuristic for exploring student meaning-making in writing that drew on: Ivanic's (1995) framework for exploring the role of 'writer-identity' in student writing; Clark et al.'s (1990) exploration of 'rights and obligations in student writing'; and Fairclough's work on the role of context in writing (Fairclough, 1992). In order to explicate possible connections between 'writer-identity' and Bandura's notion of 'self-efficacy' I would like to focus on the aspects of Lillis' heuristic that maps Ivanic's dimensions and Clark et al.'s questions. Ivanic's three dimensions, designed to reflect the relationships between 'writer-identity' and writing practises, are Authority, Authorial Presence and Authorship and Lillis maps the questions posed by Clark et al about writing: '...how students can(not) write in academia' (1990) onto Ivanic's dimensions. When the two sit alongside each other they illuminate many of the tensions that accompany student writing in terms of 'writer-identity' or what Clark and Ivanic call 'possibilities for self-hood' (1997, p. 136):

**Table 2 Dimensions of Identity in Writing**

Who can you be? ( C ) Who do you want to be?	Authority (I)
2. How can you say it? ( C ) How do you want to say it?	Authorial Presence (I)
3. What can you say? ( C ) What do you want to say?	Authorship (I)

(Source: Lillis, 2001, who draws on Clark et al, 1990; Fairclough, 1992 and Ivanic, 1995)

Note. ( C ) refers to Clark et al. 1990 and ( I ) refers to Ivanic 1995.

Some of the potential for Bandura's framework in a study of academic writing may lie in the way that these dimensions of 'writer-identity' (specifically the possibilities and tensions articulated in Table 2) may be informed by the kinds of beliefs and feelings that we have about our writing abilities. Perhaps, by learning about these beliefs and feelings and the ways in which they are shaped, something can be learned about how particular 'possibilities for self-hood' (Clark & Ivanic, 1997, p. 136) are achievable within and through our writing.

In conclusion, it is these conceptualisations of 'self-efficacy beliefs' and academic literacy that frame and inform the literature chosen for the following review as well as the design of this research project. In addition, the connections I suggest may exist between 'writer-identity' (as conceptualised in Lillis, 2001 and Clark & Ivanic, 1997) and Bandura's notion of 'self-efficacy beliefs' could provide additional information about how we come to believe that certain 'possibilities for self-hood' in student-writing exist.

### **3 Review of the Literature**

#### **3.1 Introduction**

This report will critically review the literature relevant to an exploration of research students' writing and academic literacy practices. The review focuses on literature that is directly connected to the overarching research questions of the project which are laid out in the introductory chapter of this thesis. Within the review, four areas emerge which delineate the areas of interest within the project: gender; academic literacies, and Bandura's notion of 'self-efficacy beliefs'.

1. The first area regards the methodological tradition within which this research is positioned: that is; a specific research tradition which engages with a socio-historical and socio-cultural approach to the study of literacies and writing - the 'Academic Literacies' tradition of literacy enquiry (see, for example: Gee, 1996; Lea & Street, 1998; Ivanic, 1998; Lea 2004; Lillis, 1999 and 2001; Lillis & Scott, 2007).
2. The second explores writing-related research, positioned within HE but linked to student-writing.
3. The third explores gender-focused research linked to women's experiences of writing research as well as gendered research that

critiques the construction of knowledge and meaning-making in the academy.

4. The fourth area focuses on research related to Bandura's notion of 'self-efficacy beliefs' (Bandura, 1986, 1989, 1987). However, in order to prioritise research directly linked to the focus of this project, 'self-efficacy beliefs' research related to writing practices will be the focus. In addition, 'self-efficacy beliefs' research that has incorporated qualitative methodologies will be explored because of the ethnographic methodological positioning of this project.

### **Rationale.**

Although this review is about students writing research<sup>5</sup>, the literature reviewed in the specific area of writing will be taken from contexts that are related to both scholarly and professional writing, as well as student-writing within research. There are two reasons for this and these are discussed below.

First, while student writing may be the specific focus of this project, it is also recognised that scholarly or professional academic writing can occur while one is a student and that, at times, there may be no clear distinction between a 'professional academic writer' and a 'student-writer' of research. Consequently, the literature may sometimes reflect these blurred boundaries.

Secondly, some of the work that has been done in the area of 'scholarly writing' or 'professional writing' is relevant to a study of students' literacy practices because the work includes reflections on the development of writing abilities (see for example, Australian and UK research into writing groups including: Morss & Murray, 2001; Parker, 2009; Lee & Boud, 2003; Aitchison, 2009; Cuthbert & Spark, 2008 which are critiqued in more detail below).

Additional work focused on professional academic writing but relevant to the writing of research students is Lillis and Curry's work on professional academic writing (2006, 2010) which draws attention to the roles of 'mediation' and 'literacy brokers' (2006, p. 12-17) in the English-medium academic publishing world. Lillis and Curry's 2006 publication points to the potential relevance of these concepts for students

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<sup>5</sup> For a definition of the way in which 'writing' is conceptualised in this project see the Key Concepts and Definitions section within section 2 of this thesis.

who are involved in the writing of research by introducing, amongst others, the work of Dysthe (2002) who, "...uses the notion of (literacy brokers) to characterise advisors of master's students as 'mediators of academic text cultures'"(p.12).

Therefore, reflections on the development of scholarly writing and the potential transferability of concepts like 'mediation' demonstrate the applicability of ideas drawn from research positioned in the domains of scholarly and professional writing to a study on students who are writing research. These threads of discussion can be seen in more detail in the review below.

### **3.2 Academic Literacies' Research**

#### **Background and context.**

One specific approach to academic literacies' research is often defined in terms of its relationship to the New Literacy Studies (NLS) (see, for example: Barton, 1994; Street, 1995; Barton & Hamilton, 1988; Ivanic, 1988; Gee, 1996). The NLS is an approach to literacy enquiry that emerged from language-related anthropological and ethnographic studies in North America and the UK in the early 1980's (see, for example, Heath, 1983). This was the beginning of what was sometimes referred to as the 'social turn' in literacy research (Maybin & Swann, 2010). It is within this socio-cultural and socio-historical orientation that the term academic literacies or academic literacy is used within this project. It is, however, important to note that the latter term is a contested one (also see Lillis & Scott, 2007, for a discussion of the different ways both academic literacy and academic literacies are used in a range of theoretical and applied contexts).

For many, the NLS became attractive to researchers who worked within educational or interventionist domains of literacy enquiry because the approach found ways to move beyond the limitations of what some described as purely 'psychological' or 'cognitive' approaches to literacy (Gee, 1996, p.2). These educational practitioners had begun to critique what was often described as the de-contextualised or skills-based approach to the teaching of literacy or what was sometimes referred to as the 'deficit approach' (Lillis & Scott, 2007, p.7 & 8)<sup>6</sup>.

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<sup>6</sup> Also see Snyder in Australia who refers to a 'literacy war' between 'conservative literacy warriors' who complain of declining levels of literacy and 'modern' literacy teachers whom are sometimes perceived to have ideological orientations that are 'too' critical or postmodern (2008, p. 3-7).

In addition, widening participation (WP) initiatives in the UK (see, for example, the National Committee of Inquiry into Higher Education's Dearing Report, 1997) began to shape admissions policies and HE funding (see Hoare & Johnston, 2011, for a detailed description of how WP policy initiatives in the UK had an impact on admission practices in UK universities, 2011, p.23). These policy-level changes meant that in some universities a greater number of students with a wider range of educational backgrounds were entering some HE institutions in the UK. Literacy researchers (see, for example, Lillis, 2001) began to ask questions about the invisible expectations involved in academic writing. Similarly the literacy-related institutional practices including their gate-keeping and regulative functions were challenged (see, for example: Lillis, 2001; Lea & Street, 1988; Ivanic, 1998).

### **Academic literacies: Ideology, epistemology and identity.**

Consequently, the academic literacy approach is sometimes conceptualised as a way of engaging with literacy practices in HE at the levels of ideology (see, for example, Lillis & Scott, 2007), epistemology (for example: Lea & Street, 1998; Lillis & Scott, 2007), and identities (see for example: Ivanic, 1998, Chapter 6). It has become an orientation to investigating literacy in HE that no longer sees the primary object of study as the 'text' and is developing new ways to engage with the contexts of literacy events. Lillis and Scott (2007 p.12 &13) describe the academic literacy approach as an expansion of the 'normative' issues usually focused on in a discussion of academic English and draw attention to the fact that the academic literacies' ideological view is 'transformative' in the sense that it explicates the regulations and conventions underpinning knowledge-making in the academy and finds ways to foreground students' voices and views, simultaneously opening up conversations about 'alternative ways of meaning making in academia' (p. 13).

### **Current debates in academic literacies' research.**

However, there are debates around the NLS and academic literacy approaches to literacy-related enquiry. One strand concerns the availability of spaces to engage with ideas about 'accuracy' and language use. Arguments about the latter sometimes emerge in literacy-related teaching and learning contexts (see, for example, Stephens', 2000, critique of academic literacies or Blommaert & Street et al, 2007, p. 147). However, these kinds of debates are concerned with a pedagogic framing of literacy and can neglect to critique the



'standards' that are being held up as absolutes or make explicit the assumptions underpinning those 'standards'.

In addition, Lillis and Scott (2007) reflect on the tradition's ability to develop empirically and theoretically<sup>7</sup> in a context where the projects can be relatively small and can sometimes be 'serendipitous' in nature.

My study will attempt to engage with these issues, by making a key goal of this pilot project to become a larger, longitudinal project within a PhD. (All of the participants in this pilot committed to a longitudinal study. The nature of this commitment was made explicit on their consent forms). I have also taken steps to make the practices and procedures that underpin my data-collection and analysis explicit. In some ways my intention has been to explore the possibility of designing a project that has the potential to be replicable, in terms of the processes, procedures and categories used for analysis and interpretation.

**Research into professional academic writing, scholarly writing and the writing of research in higher education (HE).**

The writing practices and experiences of postgraduate or doctoral-level student-researchers have been investigated in a number of different disciplines. The English for Academic Purposes (EAP) domain, which emerged, in part, from the English as an Additional Language (EAL) or the Teaching of English to Speakers of Other Languages (TESOL) fields, is often focused on the analysis of discrete units of language and the final draft of a 'text' as a unit of study. In approaches like these, primary aims include deconstructing and analysing a text's significant linguistic or discursive features, and less emphasis is given to the 'social' contexts and other layers of context that frame a text's production. Examples are Kwan's analysis of the rhetorical structure of literature reviews and introductions in theses (2006) and Parry's investigation into the stylistic conventions of the doctoral thesis (1998). One aim of these kinds of studies is to build awareness of the conventions of language and the discursive strategies most frequently used in the academy and these studies are often intended to provide materials for teaching and learning contexts (see, for example, Kwan, 2006, p.52). However, because approaches like these often conceptualise a text as the primary object of interest, these studies can be weak in their

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<sup>7</sup> However Lillis and Curry (2010) are currently involved in a project which explores the 'politics and practices of publishing in English'. This has been ongoing for eight years and involves no fewer than 50 scholars.

ability to account for the ways in which texts' social, cultural and political contexts or, ideological functions, contribute to the sense that is made of texts. In addition, within these kinds of approaches, it may also be difficult to locate and reflect on individual differences in the way people write research because the 'voice' of the author is lost in the pursuit of generalisations about the types of research texts or genres being used at university.

In contrast, recent writing-related literature in the HE teaching and learning periodicals aimed at supporting the writing practices of academics and research students alike has tended to value the social or the community and has, to some extent, engaged with contexts. However, this literature is sometimes lacking in its ability to ask questions about how individuals or groups are actually using literacies and the focus on 'the group' means that it can also be difficult to locate individual differences in approaches to scholarly writing. In Australia and the UK, research has been conducted which focuses on the mechanics and benefits of writing groups for doctoral-level education as well as the challenges faced by some of these groups (Aitchison, 2009; Lee & Boud, 2003; Parker, 2009). Cuthbert and Spark, also in Australia, have reviewed the effectiveness of a structured writing group with a more explicit training agenda (2008); while in the UK, Murray and Morse conducted a similar review of a structured 'Writing for Publication' (WFP) group (2001). Their approach suggests that writing groups can improve the writing outcomes and productivity of researchers. However, although the WFP encouraged the sharing of individual writing strategies, it still promoted a particular way of writing: an 'incremental approach' (2001, p.46) and did not explicitly explore other styles. As a result, even though their findings include claims that participants' confidence and productivity were improved, it is difficult to gauge what the issues might have been for participants who did not 'gel' with their specific approach.

In the field of academic literacies' research, there has been an emerging focus on professional academic writing and the struggles of scholars who are situated outside of English speaking countries to have their work published in English-medium journals (Lillis & Curry, 2006; Lillis & Hewings et al, 2010). Lillis and Curry's work draws attention to the ways in which 'literacy brokers' (p.4) are engaging with these scholars and the impact of the practices. This research provides insights into the real-life practices of academic scholars seeking publication and the way in which the hidden and explicit conventions underpinning these practices can inform and shape publication procedures. Lillis and Curry's work is distinct in this field because of its methodological approach: a longitudinal, ethnographic study which traces the 'text histories' of research publications.

It also provides empirical evidence of the challenges faced by the central and southern European academics in their study (2006, p.5). Their work draws attention to the importance of finding ways to trace the influence of the people and institutions that have a stake in what is being published as well as the importance of asking questions about the values that frame certain publications. As mentioned in the Rationale for this review, in addition to its empirical, richly detailed approach, this research is also relevant to the study being undertaken here because of the way it focuses on the role of 'mediation' and 'literacy brokering' in academic illiteracies and the significance of these concepts for students who are developing skills in scholarly writing.

### 3.3 Research into Women Writing Research and Women in Higher Education

Studies that investigate the experiences of women writing research are sometimes focussed on the experiences of women being scholars (see, for example, Davies, 2006). They may also critique the ways in which women and men are represented as researchers and in research. One example of the latter is Gordon's feminist critique (1988) of Clifford and Marcus' seminar on the *writing of culture* (see their preliminary report, Marcus & Clifford, 1985). This seminar led to the publication of 'Writing Culture' (1986). Gordon challenged the under-representation of female academics in the seminar and critiqued the way in which Clifford and Marcus had suggested that, although they were aware of the value of feminist theory in studies related to the creation of ethnographic texts, there was not enough 'exclusively feminist' research being undertaken on the topic in order to merit its addition to their seminar. Gordon's critique was significant in that it drew attention to the ways in which women's experiences were being overlooked in anthropological and cultural accounts (both with regard to the experiences of scholars and those who were being represented in anthropological accounts). Similarly, a recent special issue of the *Journal of Geography in Higher Education* (September, 2009) explores the ways in which gender is currently being engaged with (and not engaged with) in Geography in HE. This issue presented a number of empirically based studies which had investigated pedagogical contexts in HE that had been set-up to explore and reflect on gender and feminism. The issue reflected on the effects of their interventions and the ways in which gender is being both resisted and moderated or 'silenced' in HE.

A body of work, focusing on issues around gender and women in the academy, draws attention to, and contests, the types of 'knowledge making' which are considered normative in HE (see, for example, Oakley's discussions on the 'paradigm wars' 1999a

and gender and methodology 1999b or Lentin's, 1993, paper arguing for greater recognition of a feminist methodology as a 'separate paradigm', p. 119). In addition, research is being undertaken into the kinds of roles that are considered central to meaning-making in the academy and how this affects women. Reay (2000) drew attention to the fact that many of the 'contract researchers' at British universities were women and identified many of these women, including herself, as working class. She reflected on aspects of her own experiences as a working class woman and a contract researcher and drew attention to the fact that contract researchers' salaries are often lower and their status and academic recognition limited. Reay argues that this has implications for who is seen to be doing the 'thinking' in research and who is perceived to be doing the field work or 'leg-work'. She also discusses the tensions that surface when these two research activities are treated as separate entities (also see also Oakley, 1995, cited in Reay).

Whilst Reay's work is illuminating and engages with important issues around gender and class in HE, as well as what constitutes 'academic' - it is interesting to note the main recommendation in her conclusion. She states that: "...all feminist academics from the contract researcher to the eminent professor, (should) recognise '... privilege, including their own, as a problem to be addressed (and that it is only then that) more ethical non-exploitative relationships (can) be established with others both inside and outside the academy'" (p. 20). As a female student-researcher I cannot help but wonder why the demand for all 'feminist academics' working in HE to recognise 'privilege' '...as a problem to be addressed' does not extend to non-feminists and would argue that framing this as a priority (although, perhaps intended to highlight the tensions that exist amongst feminist academics in the academy) takes the focus away from what seems to be the most pressing issue in this specific context, that is, the exploitation of working class women in British academia.

There are several similar themes that emerge in studies involving women in the academy. These studies intend to make visible the struggles which many women in academia are involved in as they find ways to make their voices heard and legitimised. These include: 'the contradictory dimensions' of speech and silence for women in the academy (see for example, Luke, 1994, p. 211); the ways in which the personal dimensions of 'care' or 'service' are valued (or resisted) by academic professional women and the institutions in which they work (see for example, Blackmore 1999's study on women educational leaders cited in Leathwood & Read, 2009); and the various ways in which the 'community vs. the individual' affects women's lives as educators and/or researchers (for a more detailed discussion, see Leathwood & Read, 2009, p. 139 ). Finally,

as can be seen in Reay (2000) the tensions which can emerge for women as a result of power differences between female academics and feminists have also been a focus in feminist studies linked to women in HE (also see Skelton, 2005).

Research which is specifically about women writing in academia can be seen in Grant and Knowles (2000) who investigated academic women 'be(com)ing writers' by researching two writing 'interventions': a writing retreat for universities and a writing group at an Australian university. They focused on learning about both the practical strategies that are, and can be, employed by women in order to become more productive writers at university. They also attempt to locate the different beliefs that women have about themselves as writers. In addition, Lillis (2001, Chapter 5) addresses the many different facets of engaging with gender in a study of academic literacy in HE and reminds the reader of the importance of acknowledging diversity amongst the women participating in research projects (p. 120) and warns "...against any easy reading of their (the women's accounts in her study) intentions, desires and concerns for meaning making in academic writing from their texts alone" (p. 130).

As illustrated by Reay's study of the 'contract research worker' and Gordon's critique of the lack of women in the writing culture seminar; the findings of the studies above highlight the importance of engaging with questions around whether the roles of women in HE are minimised, and whether there needs to be greater discussion around how women's views are presented in research. In addition, for this thesis, it is important to note the fact that I am particularly interested in exploring these questions with regard to the experiences of women who did not follow what is sometimes called the 'traditional' path into university: that is; they did not enter their undergraduate degrees directly after completing their A Levels (for a more detailed discussion of this aspect of this study see pages 12 & 13 of this thesis).

### **3.4 Self-Efficacy Research Related to Writing and Qualitative Self-Efficacy Research**

Zimmerman and Bandura (1994) conducted research into 'self-efficacy beliefs' concerning 'academic achievement' and 'writing' of college-level students. They explored two classes '...in a quarterly course on writing' (p. 849) and how their beliefs about their capacity to achieve high grades in a writing class affected their actual performances in terms of the grades achieved. The two classes were considered to be at different 'levels' but both above average, that is, 'regular' and 'advanced' (p. 849). Zimmerman and

Bandura used structured survey instruments and scales to measure the students' opinions about their ability to achieve certain grades before doing the course and then compared these measurements to their final grades. The study found the following:

Perceptions of self-efficacy for writing influenced both perceived academic self-efficacy and personal standards for the quality of writing considered self satisfying. High personal standards and perceived academic self-efficacy, in turn, fostered adoption of goals for mastering writing skills. Perceived academic self-efficacy influenced writing grade attainments both directly and through its impact on personal goal setting (p.846)

However, because the two classes of college-level students were from a 'highly selective university' (p. 849) in an average and an advanced writing class; the study may be limited in its capacity to explore the experiences of a diverse range of students (in terms of their feelings about their own abilities as writers). Similarly, its focus on measurement meant that the outcomes of the paper were tied to actual student grades and as a result were only able to provide a relatively narrow view of the role of 'self-efficacy beliefs' in writing. Zimmerman and Bandura touch on this limitation in their conclusion: "Other self-regulatory factors that have been shown to contribute to cognitive performance - such as, 'perceived self-efficacy' for self-directed learning and analytic strategies - were not included in the present study (Schunk & Hanson, 1989; Wood & Bandura, 1989; Zimmerman, Bandura & Martinez-Pons, 1992, p. 859)". In essence, the potential to explore both the sources of 'self-efficacy beliefs' and the different ways these might be influenced was limited.

While a primarily qualitative study investigating 'self-efficacy' may be limited in its capacity to enter debates concerning aetiological models or construct validity (for details of the way in which construct validity has been assessed in a range of self-efficacy studies see Usher & Pajares, 2008, p. 758-760); a qualitative study may have the potential to foreground the individual's experiences. This foregrounding of the individual was not prioritised in the earlier studies on 'self-efficacy beliefs' (e.g. Zimmerman & Bandura, 1994). However, recently some studies have investigated Bandura's 'self-efficacy beliefs' using predominantly qualitative methods to do so. For example, Goto and Martin, 2009, explored the different ways that 'thresholders' navigate their way into adult education courses and Zeldin and Pajares, 2000, investigated the 'self-efficacy beliefs' of women who have chosen Mathematical, Scientific and Technological Careers. The different

strategies used within these projects to conceptualise and discuss 'self-efficacy beliefs' have been drawn on for this project. This is particularly so in the case of Zeldin and Pajares' research where they developed analytical categories that reflected Bandura's hypothesised sources of 'self-efficacy beliefs' (this is discussed in more detail in the analysis section of this thesis - section 5).

### **3.5 Conclusion**

This project's design will, therefore, draw on the specific academic literacies' research tradition discussed in the Review of the Literature in this thesis, which includes – amongst others, Lea and Street, 1998; Lillis, 2001; Lillis and Scott, 2007, and Lillis and Curry, 2006 and 2010. I have chosen this orientation to research academic literacies in order to foreground the experiences of student-researchers and to critically engage with literacy in academic contexts. The project will also attempt to engage with the potential limitations of this academic literacies' research tradition by increasing the number of participants and shaping the study into a longitudinal one in a future PhD project. In addition, it will be important to evaluate whether the methods used in this project: reflect the diversity of women's experiences within student-related research, and explore whether women's roles in HE are 'minimised' - and if so, in what ways. Finally, this project will also draw on Bandura's notion of 'self-efficacy beliefs' (1986, 1989, 1995, 1997), and the qualitative self-efficacy studies (for example, Goto & Martin, 2009 and Zeldin & Pajares, 2000) in order to investigate the usefulness of Bandura's construct in a study of academic writing.

## **4 Methods of Data Collection**

Within this project, methodology is conceptualised as an approach to the research that assumes a particular epistemological and ontological orientation, whereas methods are considered to be the actual processes and procedures that are used to collect, 'handle' and analyse data. Within this project it is also recognised that, for some, epistemological and ontological tensions emerge when an ethnographic approach is assumed in a literacy/writing focused study. These threads are discussed in more detail below.

In terms of the general methodological approach assumed in this project, a context-rich methodology has been developed that draws on traditions within ethnography and

linguistics to explore the writing-related 'self-efficacy beliefs' of women who are first year research students.

The methodology reflects:

1. A constructionist paradigm whereby writing is conceptualised as the construction of knowledge, identity and institutions (see, for example, Gee 1990).
2. A social view of the nature of literacy (e.g. Barton, Hamilton & Ivanic, 2000; Heath, 1983; Lillis, 2001; Street, 1984).
3. An interest in testing the usefulness of Bandura's 'self-efficacy' construct in a study of academic writing. This construct emerged from Bandura's 'social cognitive theory' (1986).

In terms of the development of an analytic sensibility, Gee's description of the purpose of discourse analysis (DA) signals the way in which language analysis is conceptualised: "the analysis of language as it is used to enact activities, perspectives, and identities" (1999, p. 4 & 5). In addition, Lillis (2001); Ivanic (1995); Clark et al.(1990) and Clark and Ivanic's work (1997) focusing on the importance of exploring the formation of identities and the power relations that lie within writing, provide further insight into the value of applying DA to this specific research area and the critical orientation that frames the approach to analysis.

An ethnographic research focus that includes language brings with it particular tensions and challenges. In November 2007 a special issue on linguistic ethnography in the Journal of Sociolinguistics reflected on the development of linguistic ethnography in the UK. Rampton describes the tradition as an ethnographically styled movement that is situated between several disciplines '*... (inter alia, Interactional Sociolinguistics, New Literacy Studies and Critical Discourse Analysis) ...*' and '*... produces analytic sensibilities tuned to discourse analysis as a method ...*' (p. 584). This special issue discusses some of the 'methodological tensions' that emerge when 'linguistic analysis' is combined with 'ethnography' (Tusting & Maybin, p. 576). More specifically, Tusting and Maybin (p. 581) and Hammersley (p.691-693) draw attention to the relevance of debates conducted within ethnography between some realist orientations and some constructionist views.

In the context of these debates, constructionist views are seen as approaches to research where 'social phenomena' are understood to be constituted, at least to some extent, in the ways in which we make meaning and sense from our world (Hammersley,



2007, p. 691). In addition, when considering these tensions, it is also important to note that realist orientations are conceptualised in research in a number of different ways. For example, realism is not always 'naïve', a belief where individuals are understood to have the ability to have a direct access to 'reality' and are able to represent it faithfully. For example, Sealey (2007) describes 'sociological realism' as a:

"...post-positivist philosophy, which insists, among other things, on a strong emphasis on human agency. Realist approaches recognise both that reality has an existence which is independent of how we choose to describe it, and that our descriptions are inevitably mediated through discourse." (p. 642)

It is with this sense of there being an 'independent' reality, 'mediated through discourse' that the epistemological and ontological positioning of this research is located. Secondly, in addition to the sociological realist perspective described above and in so far as 'ethnography' is concerned, Blommaert's definition of a 'good' ethnography underpins the use and the application of the term because his framing of ethnographic draws attention to both the 'concrete' aspects of human experience as well as the importance of 'reflexivity':

...(a good ethnography should be) iconic of the object it has set out to examine, it describes the sometimes chaotic, contradictory, polymorph character of human behaviour in concrete settings, and it does so in a way that seeks to do justice to two things: (a) the perspectives of participants – the old Boasian and Malinowskian privilege of the 'insiders' view'; and (b) the ways in which micro-events need to be understood as both unique and structured, as combinations of variation and stability...(and)...a third one was added from the 1960's and 1970's onward...: (c) a concern for the situated and dialogical character of ethnographic knowledge itself – reflexivity. (2007, p.682)

In terms of the actual methods used, I began the empirical work for this project by contacting 58 women from a single UK based university who met the following criteria. These criteria were:

- female,
- in the first year of a research qualification, and

- either full-time or part-time students.

I had been given the contact details for all of the students who met these criteria at a single, UK based university and I emailed the entire population (58 students) once<sup>8</sup>. As mentioned in the Ethics section of this thesis, I was conscious of not wanting to overwhelm potential participants. When first contacted, all of the students were supplied with a letter of invitation and a consent form (see Appendices E & F) which gave details about the amount of time they would be expected to commit to the project (including the fact that I intended for the project to become a longitudinal one) and the nature of the research, as well as information concerning ethics and details regarding anonymity and privacy<sup>9</sup>.

Approximately 10 women responded to my email and expressed interest in participating. We then had informal email conversations in which they asked questions about the research. At the conclusion of this process, five students were left who were keen to be participants. Other first year PhD students who knew me personally expressed a willingness to participate, but many of these students were also undertaking their PhD probations at the time and I felt there was a greater chance of establishing long-term research-relationships if I were to contact them for the next stage of the research (after this pilot project).

Once it had been established which students would participate, they were asked to submit their consent forms and a piece of writing they had completed that was directly related, in their view, to the ongoing development of their research. Appointments were also made to conduct Skype interviews, face-to-face interviews or a telephone interview, depending on which style of interview suited each participant.

Later in the study, and once the interviews were transcribed, I asked the participants to complete a series of three to five diary entries over a period of a week regarding a specific piece of written work they were working on. Questions guiding the diary writing were attached to a set of instructions outlining the task<sup>10</sup>. Although the participants were given the choice to make audio recordings as a form of diary, the three students who submitted diary entries submitted written versions.

Table 3, below, summarises the data collected for each participant and outlines where data was missing and any problems that occurred within the data collection process:

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<sup>8</sup> I had been granted approval to receive these details and contact these participants from the *student project research panel* and the *ethics committee* set up to review approaches to students for research – see Appendices C & D.

<sup>9</sup> See Appendices E & F for a copy of the letter of invitation and consent form sent to participants.

<sup>10</sup> See Appendix G for a copy of the instructions sent to all participants regarding the journals.

**Table 3 Overview of the Data Collected for Each Participant**

	Interviews	Written diary submissions--related to the development of one piece of writing	Sample of Writing -related to the development of the participant's research <sup>11</sup>
P1	Skype 21.23 & 74.15 minutes	Three entries over one week	A reflective assignment submitted to a supervisor within an Doctorate in Education (EdD) <i>2521 words</i>
P2	Skype 74.19 minutes	0	A Masters level assignment linked to the participant's current Ed D research focus <i>3507 words</i>
P3	Telephone 38.06 minutes	0	A final report for the first year of an Ed D <i>6198 words</i>
P4	Face-to-Face 38.20 minutes	5 entries over one week	A Master of Research (MRes) coursework assignment <i>3780 words approximately: hard copy submitted.</i>
P5*	Skype *18.48 minutes	3 entries over one week	An Ed D pre-probation research proposal <i>14, 616 words</i>

**Notes:** \*(P5) The sound was faulty in the first interview arranged with P5 so the interview questions which needed less context were emailed to her with an explanation and she was asked to respond by typing in responses. She sent the typed responses back, via email, and this was then followed up with a second, more substantial, interview which was successfully recorded.

As can be seen from notes beneath Table 3, two unforeseen problems occurred during the data collection process. Firstly, the audio on Skype was not working for the first interview arranged for P5 so on the same day we agreed that I would send her an electronic version of a selection of the interview questions. P5 agreed to respond to the questions by typing her answers into a Word document. We then followed this up by an additional Skype interview and focused on the areas in her written responses I felt needed elaboration. In addition, two of the participants chose not to do the 'diary' because of work pressures. However, I did feel that the first, core interview with one of those participants

<sup>11</sup> The participants volunteered texts which they saw as having been integral to the development of their research. The actual texts had all been assessed within the participants' respective research-related studies.

was particularly substantial because a theme in her own research was similar to Bandura's 'self-efficacy' construct (she was exploring the 'anxiety levels' of trainee nurses in teaching and learning contexts).

Similarly, I also realised within the interview process that my schedule of questions did not allow for specific reflections on gender. For this reason, I added a very general question at the end of the interview: *Do you feel that your writing in HE, or your experiences of HE generally, have been unique in any way because you are a woman? Could you give examples?*

Overall, I felt satisfied that in the time available meaningful data was generated for the project, although the circumstances of data collection were slightly different for each participant (Table 3 provides an overview of the data sources drawn on for the project).

To summarise the key aspects of the project's design discussed in this chapter and provide more detail about the participants, Table 4 below describes the research questions, methodology and methods used in this project:

**Table 4 An Overview of the Research Questions, Participants, Methodology and Methods**

Research Questions	<p>What are the relationships between the participants' beliefs and feelings about writing, as seen through the lens of Bandura's notion of 'self-efficacy beliefs', and their research-related HE writing practices and experiences?</p> <p>What are the strengths and limitations of Bandura's notion of 'self-efficacy' beliefs in a study of academic writing?</p> <p>Specifically, what are the strengths and limitations of this notion in relation to women?</p>
Participants	<p>Five women at the early stages of their research degrees in a UK based university.</p> <p>The women are studying a Master of Research (MRes) or a Doctorate programme.</p> <p>Their Higher Education Statistics Agency (HESA) codes are: 'Management Studies'; 'Academic Studies in Education'; and 'Others in Education'.</p> <p>Their research topics are: Health-Science, Business, Digital History, Literacy and Linguistics.</p> <p>Four of the students are part-time, while one student is full-time.</p> <p>Three participants live in the UK, while two live in the EU, but all are studying within a single UK based university.</p> <p>They are aged between 40 and 60.</p>
Methodology	<p>A context-rich, ethnographic methodology drawing on traditions within ethnography and linguistics to explore the writing-related 'self-efficacy' beliefs of women who are beginning research-related studies.</p>
Time period for data collection	<p>13th of May 2011 to July 31st 2011. Total: 2.5 months</p>

#### 4.1 Rationale

This rationale will provide a justification of the methods used and discuss in more detail how the use of talk-around-text interviews and diaries were intended to provide information which would help test the usefulness of Bandura's notion of 'self-efficacy' in a study of academic writing.

The written texts were a significant part of the data for several reasons:

1. They were intended to provide a tangible and authentic product of HE participation which allowed both the researcher-participant and the participants to be situated 'closely' to an authentic HE experience.
2. They generated discussions around beliefs and feelings about writing that foregrounded the participant's perspectives regarding writing and other aspects of their lives that related to their writing practices.
3. The 'talk-around-text' dialogue mirrored how *academic literacy* is conceptualised within this project: as a practice informed and shaped by its social and cultural contexts (see section 2.01 for a discussion on how *academic literacy* is conceptualised in this project).

Below, Lillis discusses the ways in which talk-around-text methodologies foreground participants' perspectives:

Typically, such writer-focused talk (a) encourages comment and reflections that go beyond writing within current dominant conventions and practices and (b) recognises that the participants' analytic lens and perspectives are central to establishing what may be significant and important in any given context.

(2008, p. 359)

It is impossible to draw any definitive conclusions about the usefulness of the diaries as a tool to engage with the participants' beliefs and feelings about writing because of the small number of participants that completed entries; the limited number of entries and the lack of feedback regarding the method from the participants themselves. (These

issues are taken up in more detail in the findings of this thesis.) It did appear, though, that the diaries may have been useful because they allowed for private reflections which occurred closer to the time and space in which a specific piece of research-related writing was taking place. Additionally, even though the participants would have had some level of awareness of the researcher-participant while writing their diaries, there may have been a sense of 'distance' between the researcher-participant and the participant in the 'diary context' that was not present in the interviews. However, as mentioned, these suggestions require further investigation.

Therefore, the talk-around-text interviews and the diaries were selected as methods for the data collection in order to gather information about the participants' beliefs and feelings about their writing, or 'self-efficacy beliefs', and to gather information about their writing practices and experiences.

## **4.2 Reflections on Reliability**

I recognise that as a woman who is a student researcher I have my own opinions and beliefs about the research topic and these will have played some role in the shaping of the research outcomes. In recognition of the inevitable role my own experiences and understandings have brought to the research I have referred to myself as a researcher-participant. In addition, I made my 'insider' positioning clear to all the participants so that the effects of my 'position' would be consistent as possible in all contexts.

It may be that this type of 'interference' was reduced by the use of the diaries. However, because of the limited nature of this pilot project, much more work is needed before any conclusions can be drawn about the use of the diaries.

It may also have been that my 'insider/student' positioning had some advantages because the participants may have felt more open about expressing their ideas, opinions, feelings and experiences about writing than they would have been with their teacher or tutor: Grades were not at stake in our relationship.

I also recognise that the women's responses may have been closely tied to the immediacy of specific writing experiences and that their beliefs and feelings about their writing abilities may change according to different times, locations and writing activities. This is an area I would like to explore in more depth in future research, where I will be able to compare participants' beliefs and feelings concerning different writing activities.

I would also like to briefly comment on the fact that the sample included women who studied part-time and full-time and who were both off-campus and on-campus

students. It could be that these different factors influenced their research related writing activities, and as a result, influenced the outcomes of this research. I did consider this point before settling on a sample and decided that to choose one specific group who studied in a particular way, at this stage of the research, would not be practicable. In addition, for many women who have child-care and family related responsibilities, and who may also be working, having to study 'part-time' or studying 'off-campus' is an inevitable reality. However, I will ensure, once a larger group has been recruited over a longer period of time that the research design enables comparisons between the experiences of full and part time and on and off campus students.

#### 4.3 Ethical Considerations

Before any participants were contacted for this research, I ensured that I complied with the university's ethics' protocol for involving human participants in research, and that official approval was granted by both the university's human research ethics committee and student research panel<sup>12</sup> This process entailed providing evidence of the following processes:

- 'informed consent'<sup>13</sup>;
- the choice of 'anonymity' for participants, and
- an awareness of the UK Data Protection Act 1988 and the Freedom of Information Act 2000.

Areas of this specific project which were developed as a result of dialogue with the student research panel included more explicit explanations of the nature of the participants' contributions to the research<sup>14</sup> and the ethics of targeting women which has also been discussed in the Rationale for a Focus on Women section of this thesis (1.04).

Throughout the recruitment process, I also aimed to develop research relationships with participants which had the potential to be sustained over a long period of time. Most

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<sup>12</sup> See Appendices C & D an email of approval from the student research panel and the ethics committee, as well as a certificate of approval from the ethics committee.

<sup>13</sup> See the consent form sent to participants, approved by the student research panel and ethics committee in Appendix F.

<sup>14</sup> See the letter of invitation sent to all potential participants in Appendix E



particularly, I didn't want the participants to feel obligated to participate. For these reasons, I did not contact the participants with repeated invitations to participate – I invited them to participate once, at one email address. As a consequence, I feel that those who volunteered were freely engaging with the research and that these relationships may become long-term ones.

I have also attempted to take measures to protect the anonymity of those who did choose to participate by using pseudonyms in the thesis and not referring to the name of the specific university from which the participants were recruited.

Overall, the ethics approval process provided a space to reflect on the people involved in the project: real people whose lives can be affected by their participation - a fact that I will re-visit when appropriate throughout the research process.

## **5 Analysing the Data Using Bandura's notion of 'Self-Efficacy Beliefs'**

The analysis of the data was undertaken in two phases. Firstly, the talk-around-text interviews were analysed. Secondly, the participants' diaries were analysed. Outcomes from the analysis of both of these data sources contributed to the findings of this thesis. The section describes and explains the categories chosen to look at the data through and the steps taken to reach the tentative conclusions presented in the final chapter of this thesis. This section concludes by explaining how the participants' written texts informed analysis in specific ways.

Once I had interviewed all of the participants, I listened to the interviews without taking notes or generating themes to become familiar with the participants and the interviews themselves.

I then transcribed the interviews so that I could acquire an overview of their content. However, I do recognise that this transcription was, to a certain degree, an *interpretation* of the raw data. In fact, at a certain point within the transcription process, I did feel that identifying elements of intonation, stress and rhythm may have added depth to the transcriptions and to this *interpretation*, but because of the time constraints I chose to prioritise a basic transcription the content. The prosodic elements will be taken up as an additional layer of transcription - and one which will be completed after this initial pilot project. Appendix H shows the transcription key used for the transcription of all interviews.

As I was transcribing the interviews, I was also selecting quotes and placing them into specific categories. I chose to look at the data through the lens of Bandura's

hypothesised sources of 'self-efficacy beliefs', so that I could test the usefulness of the construct as a means of reflecting on the relationships between beliefs and feelings and HE writing practices and experiences<sup>15</sup>. Using these four sources as categories mirrored the analytical process of other projects that had investigated the development of Bandura's 'self-efficacy beliefs' (see Usher & Pajares, 2008 for a critical review of the literature focused on sources of self-efficacy in school and Zeldin & Pajares, 2000 for an examination of the sources of 'self-efficacy beliefs' of women in Maths, Science and Technology careers).

Figure 2, below, is an extract from a participant's interview which illustrates this process. This particular quote was placed in a category called 'forms of social persuasion' (one of Bandura's hypothesised 'sources' of 'self-efficacy beliefs') because the quote could be interpreted as a data source that shows how a participant's beliefs and feelings about writing, and their own abilities as writers, might be influenced by input from others:

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*On teaching how to 'write' to Italian students in Italy: So the students wanted to know how to write and I was saying, 'ok, you have to have you know a really good structure. You have to plan blah blah blah'. And then I was saying, I wanted to say that, and I was on Skype and the professor I work with was in the room with the students and I said something like, 'Then I have to tell you a few things about the conclusion'. And when I stopped talking the Professor said, 'You are not allowed to write any conclusions because you're just undergraduate students. So you're not supposed to be able to draw any conclusions from anything. Just report.*

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**Figure 2. An extract from an interview which demonstrates how Bandura's hypothesised source of 'self-efficacy beliefs' - 'Forms of Social Persuasion' - was used in analysis.**

However, in order test the potential of Bandura's notion of 'self-efficacy beliefs' in a study of writing, I needed to take additional steps.

Firstly, because I have suggested 'self-efficacy beliefs' may be one way of exploring how 'writer-identity' (as conceptualised by Lillis, 2001, drawing on Ivanic, 1995, Clark and others 1990 and Fairclough, 1992) - or 'possibilities for self-hood' (Clark

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<sup>15</sup> See Figure 1 for a summary of Bandura's hypothesised four 'sources' of 'self-efficacy beliefs'.

& Ivancic, 1997, p. 136) might come about (see the Key Concepts and Definitions section of this thesis) - I thought it necessary to explore what this could mean empirically. For this reason, I created an additional category called 'writer -identity' and included extracts that reflected the dimensions of 'writer identity' foregrounded in Lillis, 2001 (see Table 2). To highlight where I could see relationships between these 'possibilities for self-hood' and the participant's 'self-efficacy beliefs', I underlined sections in the quote<sup>16</sup>.

Secondly, I placed some extracts from the interviews into a category called 'Resources: Financial, Time and Physical Environment'. While Bandura's model was effective in processing social and cognitive-related information, it was not an effective tool to process information regarding the physical environment or what the participants said about the effects of 'resources' – which, I suspect, affected the women's writing practices, and may have affected their beliefs and feelings about writing. This is, I believe, a limitation of Bandura's model which I take up in more detail in the Interpretation and Findings sections of this thesis.

Appendix J is a table which maps a selection of quotes from one participants' interview on to the four hypothesised sources of 'self-efficacy beliefs' and the two additional categories explained above.

The second phase of analysis was focused on the diaries which were designed to experiment with what might constitute, empirically, a 'self-efficacy belief'. In this exercise the participants had been asked more directly about their beliefs and feelings about their writing abilities (or 'self-efficacy beliefs') - related to a specific writing task they were working on at the time (see Appendix G). As a result, I chose to analyse the content of the diaries by, firstly, exploring what might be called a 'self-efficacy belief'. I then mapped these so-called 'self-efficacy beliefs' against the contextual factors that accompanied them – as described by the participants in their diaries. This proved useful because it enabled me to focus on factors that may have had an immediate affect on these beliefs and feelings or 'self-efficacy beliefs' concerning writing<sup>17</sup>.

To conclude this analysis section, I will briefly describe how the texts formed an important part of the talk-around-text interviews and informed analysis in particular ways.

The participants' written texts were not analysed as a separate phenomenon devoid of context. The texts, in conjunction with the interviews, enabled both the researcher-participant and the participants to explore both the text and the contexts of the text's

<sup>16</sup> See Appendix J for an example map where quotes from a participant's interview are mapped against the analytical categories explained in this section of the thesis.

<sup>17</sup> See Appendix G for a map that explores mapping 'self-efficacy beliefs' extracted from a diary against contextual features (as described by the participant).

production. This dialogue prioritised the experiences and perceptions of the participants, in the sense that they were being asked to elaborate and explain particular aspects of their own writing. Lillis (2008) explains how this kind of talk-around-text analytical framework can '...help move the researcher towards emic perspectives and towards analytic lenses that help foreground what is significant to writers from their specific sociohistorical perspectives' (p. 373).

In practice this meant that the participants' texts were used within the interviews and informed analysis in the sense that they provided insights about the participants' beliefs and feelings about their writing abilities. A practical example can be seen in the interview extract in Appendix K which was taken from the interview with P3. In the extract I make reference to the participant's written text (a research proposal she had submitted to her supervisor)<sup>18</sup>. This extract from the interview demonstrates how a discussion of her written text (the proposal) drew attention to a concept that was of particular importance to her. In the extract she explains how learning to be 'analytical' and 'asking questions' had affected her beliefs and feelings about herself as a writer.

The following section interprets the data in response to the research questions and begins the process of introducing the findings reached of this project.

## **6 Interpreting the Data in Response to the Research Questions**

Table 5 maps the general patterns and themes that emerged from the data against the research questions. This process is not intended to produce categorical generalisations about the beliefs and feelings of student-researchers and their effects, but to begin to identify themes and ideas that specifically relate to this trial of Bandura's notion of 'self-efficacy' beliefs in a study of writing.

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<sup>18</sup> See Appendix L for a copy of this specific written script.

Table 5 Map of the Research Questions and the Themes Reflected in the Data

Research Question	Interpretations: Themes Emerging from Analysis
What are the relationships between the participants' beliefs and feelings about writing, as seen through the lens of Bandura's notion of 'self-efficacy beliefs', and their research-related writing practices and experiences?	Using Bandura's notion of 'self-efficacy beliefs' as a heuristic I was able to adopt an analytic gaze that was focussed on beliefs and feelings about writing abilities and their relationships to writing practices and experiences. During the data collection process, the participants talked about their writing practices and experiences, and there were instances where positive 'self-efficacy' appeared to be built, and moments where 'self-efficacy' may have been undermined. It also appeared that certain relationships (personal and professional) had a particularly strong influence on writing practices and experiences, which in turn, affected their 'self-efficacy beliefs' concerning writing. Below, I have provided an overview of some of these key moments: times where writing practices and experiences appeared to have had some role in shaping 'self-efficacy beliefs' concerning writing, which may in turn have affected future writing practices and experiences. I have divided these examples into two groups: those related to the development of positive 'self-efficacy beliefs' concerning writing and those where 'self-efficacy beliefs' concerning writing may have been undermined.

*Writing practices and experiences related to positive writing-related 'self-efficacy beliefs':*

P3 developed a specific writing practice which was based on what she called being 'analytical'. She explained how this orientation brought about a 'shift' within her own HE writing and how the development of this particular orientation had positively influenced her beliefs in herself and her abilities related to her career, studies and academic writing. For P1, asking questions and 'being allowed' to draw conclusions was particularly significant in terms of

building feelings of competence related to writing. She said that this type of orientation was 'forbidden' for those who do not hold doctorates in her country of residence - Italy. For P4 and P2, learning to learn from models (or published articles) was important in building optimistic 'self-efficacy beliefs' about writing. Models were significant for P4 because she didn't feel she had any other source of support. For P2, models of academic writing were significant because the academic culture she was most familiar with (Russia) had different 'rules' related to writing. For P5, positive feedback regarding her writing had shaped some of her choices and given her the confidence to continue with her research. She said she had been surprised by positive feedback in response to an essay she had written in a dance history class, and it was only then that she had begun to think of herself as someone 'who could write'. In addition, her current supervisor's engagement with her work and the fact that she 'pushed' her helped to give her the confidence she needed to complete her doctorate's probation report to a level she felt proud of.

***Writing practices and experiences that may have undermined writing-related 'self-efficacy beliefs':***

Several participants reported negative or challenging experiences which may have undermined their 'self-efficacy beliefs' concerning their HE writing. These include P4 who said she had found academic writing particularly challenging because she had been accustomed to the brevity and directness of 'business' writing – and, this, combined with a perceived lack of guidance in this new culture of writing, had made her experiences of writing in HE challenging. The way in which these experiences may have undermined her 'self-efficacy' beliefs concerning writing can be seen in her diary where she reflects on the impact of a lack of support for a thesis she was writing: 'Used to feel confident. M Res and uni have made me feel very dispirited'. P3 said that writing was something '...she had always been criticised for at school...' and she remembers

thinking during her early years as a student 'learning' to write academically that: 'I shouldn't be here (at university), I shouldn't be on this course – I don't have the ability to do this...'. However, with support from her employer and her family, she went on to become a nursing educator and to continue her academic studies into her current research degree.

What are the strengths and limitations of Bandura's notion of 'self-efficacy beliefs' in a study of academic writing?

Bandura's notion of 'self-efficacy beliefs' was a useful tool to apply to a study of academic writing for two reasons. Firstly, it was useful in an ethnographically styled project, in one sense, because its 'self-referential' core mirrors the 'emic' perspective that is important to ethnographic work. Secondly, Bandura's notion of 'self-efficacy beliefs' was useful because it provided a framework that clearly prioritised 'perceptions about abilities' over researcher or institutional perceptions about levels of competence in specific writing 'skills' or 'abilities'. I felt I was able to engage with the, '...writer's feelings of control about the type of person she can be in her academic writing' (Lillis, 2001, p. 50) or 'writer-identity' (as conceptualised in Lillis, 2001 who draws on Ivanic 1995, Clark et al, 1990 & Fairclough, 1992).

However, there were several aspects of Bandura's notion of 'self-efficacy beliefs' which could be considered limitations in a study of academic writing. Firstly, the framework did not directly account for the effects of the resources available to participants to support their writing practices (e.g. the availability of adequate finances, time or space). These aspects may have affected the participants' writing practices and experiences thereby possibly affecting their beliefs and feelings, or 'self-efficacy' beliefs concerning writing. A second potential weakness of Bandura's notion of 'self-efficacy beliefs' when used in a study of writing which assumes a qualitative methodology, is that the process of analysis is interpretive and could be considered 'subjective', which is not in itself necessarily problematic - but there are

tensions here between how Bandura originally intended his 'self-efficacy' construct to be used. Similarly, placing quotes into prescribed, structured categories means that there were always aspects of the data, possibly significant ones, which were overlooked. Finally, one could argue that using Bandura's notion of 'self-efficacy' beliefs overly simplifies the complex and dynamic nature of the 'cognitive' or 'internal' processes that occur within writers. These points are taken up in more detail in the Findings section of this thesis.

Specifically, what are the strengths and limitations of this notion in relation to women? Using Bandura's framework allowed me to focus on relationships between beliefs and feelings about writing and writing practices and experiences of the women in the study. Two main themes related to the women's HE writing practices and experiences emerged:

1. 'Emotional' vs. 'practical' support for studying and writing in research-related contexts (which could be related to Bandura's source of 'self efficacy' – 'forms of social persuasion');
2. Perceived strengths in 'handling' or 'coping' with demanding contexts like research-related studies and writing (which could be related to Bandura's source of 'self-efficacy' – 'emotional or physiological Indexes').

Examples of these themes can be seen in the following discussion of extracts from the participants' interviews.

In at least two cases the participants reported their families were 'emotionally' supportive of their choice to be a research student, but less supportive in terms of providing 'practical' help. However, the family of P4 were 'surprised' and 'shocked' at her decision to study. Perhaps linked is P4's preference to adopt a very independent approach to her academic writing: for the most part, she preferred to write alone. In all but one of the cases the women expressed, in different ways, that in terms of the practical, every-day,

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running of their household and/or childcare, they were mainly responsible (P4 was entirely responsible and a single mother). These responsibilities affected their writing practices in different ways. For example, P1 'snatched' short bursts of time between her parenting and housework responsibilities to write and think. In terms of perceived strengths related to 'handling' or 'coping' with demanding contexts, P5 described her activities, both as a teacher, and as a developing writer, in terms of 'handling' and 'fixing' things. Relating this to her academic work context, she said the male academics on staff did not seem to have the same kind of approach. Referring generally to her studies and academic writing, P4 spoke of the importance of not dwelling on problems, but of 'fixing' them. She said she had needed to assume, what she called, a more 'masculine' attitude to surviving the challenges of research and academic writing while being a single mother and the sole provider for her family.

In addition, by making connections between Bandura's notion of 'self-efficacy beliefs' and 'writer- identity' (as conceptualised by Lillis, 2001, who drew on Ivanic, 1995, Clark et al, 1990, and Fairclough, 1992) I was able to explore how beliefs about writing, or 'self-efficacy beliefs' might inform particular 'possibilities for self-hood' (Clark & Ivanic, 1997, p. 136) in writing. This exploration provided specific insights into how some of the participants saw themselves in academia. For example, P1 felt that even though she was 'doing' research and writing within academia, she would never be recognised as a 'professional' or as an 'academic' in the same way that her husband is. While P3 said that she had never seen herself as a 'researcher' or 'academic' but as someone who was doing research to support her practice as a nurse and educator.

Several limitations regarding the use of Bandura's notion of 'self-efficacy beliefs' in a study of women, can be seen. Firstly, as discussed in the response to the 2<sup>nd</sup> research

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question, there was no direct mechanism to 'filter' data related to the availability of specific resources to support the participants' writing practices, and the availability of resources appeared to have an impact on writing practices and experiences, and hence, beliefs and feelings about writing. For example, being a single parent meant that P4 felt she had had constraints over the kinds of choices she could make with regard to her studies and the times and spaces in which she could study and write – this in turn affected her 'self-efficacy' as an 'academic writer'. In addition, P1 talked about that fact that she didn't physically have a space in the house that was her own – a space that didn't need to be laid out and packed up before and after every study session. P1 also spoke about the restrictions created by having to 'snatch' short blocks of time, and of her desire to work whole days.

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The final section of this thesis will conclude this research by drawing on the interpretations discussed above, summarising the relevant themes in the discussion, and making recommendations for future research – specifically in terms of the PhD project which will be linked to this pilot project.

## **7. Findings**

In this thesis I have aimed to explore the beliefs and feelings of five women who are research students at a UK based university about their writing abilities. I was interested in investigating the relationships of these beliefs and feelings to their writing practices and experiences in research-related HE in the UK. The specific intention of this pilot project has been to test the usefulness of Bandura's notion of 'self-efficacy beliefs' as a 'lens' through which these beliefs and feelings can be explored.

Firstly, I acknowledge that the limited sample size, and the time available, restricts the types of conclusions that can be made here: The methods and epistemological framework used in this study do not lend themselves easily to generalisations. I would also like to make clear that even though the participants' experiences have been interpreted on these pages with care and attention to detail, I recognise that more detailed observations

are needed, with a larger group of students over a longer period of time, if a more reliable picture is to emerge of relationships between the participants' beliefs and feelings about their writing abilities and their writing practices and experiences. However, it is possible to critique the methods used to collect the data and comment on the themes that emerged from the data. My larger PhD project may then be able to build on, and test, these tentative findings.

In the last chapter of this thesis 'Interpreting the Data in Response to the Research Questions' I responded to each of the three research questions and gave examples from the data to support these responses. I will now summarise these findings and make specific suggestions regarding future directions for this research.

Firstly, Bandura's notion of 'self-efficacy beliefs' has been a useful heuristic to explore the relationships between the participants' beliefs and feelings about writing and their writing practices and experiences because it enabled a particular type of analytic gaze that foregrounded the participants' beliefs and feelings about writing in research-related higher education.

Asking the participants to talk about their own academic writing practices and experiences, with a view to eliciting an understanding of what might be called their 'self-efficacy beliefs' also provided insights into moments where it could be suggested that positive 'self-efficacy beliefs' concerning writing had been built, and moments where their 'self-efficacy beliefs' may have been undermined. More specifically the data suggests that engaging with specific 'types' of literacy practices may create more optimistic beliefs and feelings concerning academic writing abilities. It was also notable that certain literacy-related experiences, like completing a Master of Research thesis with a perceived lack of support, may have undermined 'self-efficacy beliefs' concerning writing. Finally, it also appeared that both professional and personal relationships had a strong influence over writing practises, writing experiences and 'self-efficacy beliefs' concerning writing.

As a result of this trial of Bandura's 'self-efficacy beliefs' in a study of academic writing it became clear that the framework was limited in specific ways. Firstly, it did not directly account for the effects of the availability of resources (adequate finances, time or space) on writing practices and experiences – or the participants' beliefs and feelings about their writing abilities. There were many instances where the women spoke of circumstances where these issues had affected their writing practices and experiences.

In addition, the categories Bandura suggests are used to identify the 'sources' of 'self-efficacy beliefs' were, at times, too prescriptive and this may have meant that other, possibly significant data related to the participants' beliefs and feelings about their writing

abilities, may have been overlooked. Finally, there were tensions between the 'interpretive' nature of the ethnographic approach assumed in the project and way in which Bandura originally intended his notion of 'self-efficacy beliefs' to be used: as a means of constructing an aetiological model concerning beliefs about abilities and the outcomes of one's efforts in domain specific areas.

In essence, I felt that for the purposes of a study into academic writing Bandura's notion of 'self-efficacy beliefs' tended to be overly prescriptive. The notion simplified the participants' beliefs and feelings about their writing abilities and did not allow for more interpretive 'spaces' to engage with the data.

Similarly, the way in which the 'social' influences of 'beliefs about abilities' are conceptualised does not sufficiently account for the full-range of contextual factors that frame writing practices and experiences. In this project, I focussed on the fact that the construct did not directly engage with 'finances, time and physical environment' but I imagine that this is just one way of framing 'contextual' areas that Bandura's notion of 'self-efficacy beliefs' does not engage with.

I would like to conclude this thesis by commenting on possible future directions for this research. Firstly, I believe it is important to continue to investigate the relationships between cognitive domains - or beliefs and feelings concerning writing - and the social domains related to writing practices and experiences. However, it will be important to find ways to more thoroughly engage with the full range of contexts related to the writing practices and experiences of individuals. It will also be important to draw on a theoretical model that is less prescriptive in terms of how 'sources' of beliefs and feelings are conceptualised. This may mean re-visiting Bandura's model in this light, or putting forward a different model (for example, foregrounding Lillis', 2001, conception of 'student meaning-making' and the role of 'writer-identity' in academic writing which more adequately takes the contexts of writing into account) and then drawing on some specific aspects within Bandura's 'self-efficacy' construct.

Finally, the PhD research project's design will also need to ensure it has a means of exploring differences between the experiences of part-time and full-time students, as well as ways to engage with the effects of specific writing tasks and how these might affect certain beliefs and feelings about one's writing. More detailed work, empirically and theoretically, will also be necessary on the 'diaries' as a tool to collect data, including gathering feedback from the participants' about their effectiveness as a space to record beliefs and feelings related to writing.

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APPENDICES

APPENDIX A

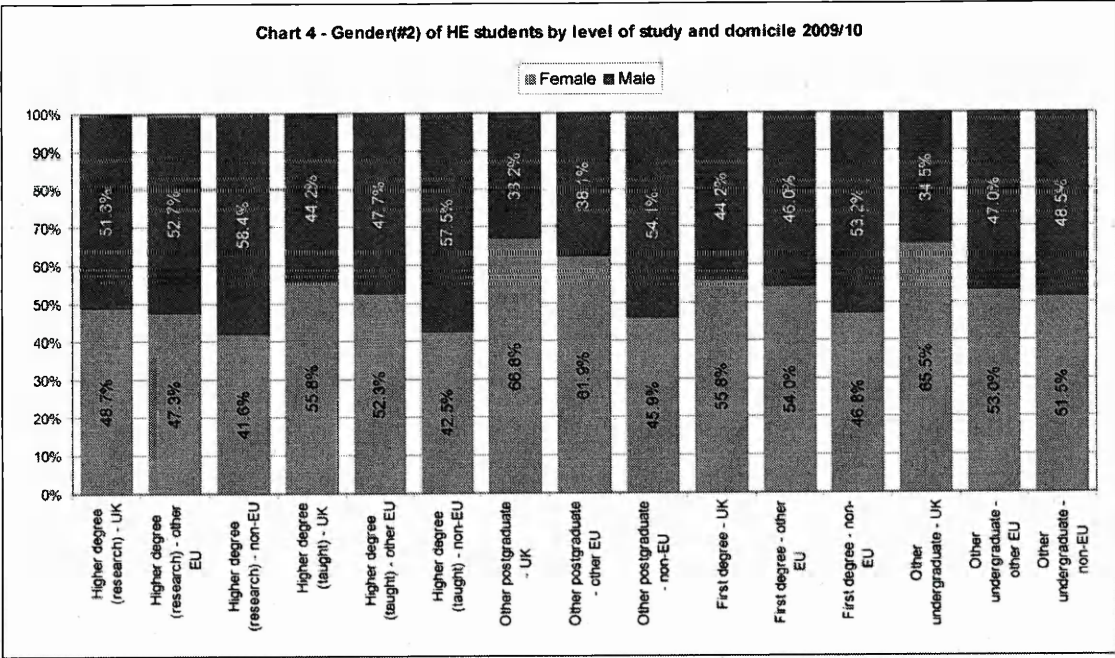
Accepted Applicants into UK, HE Undergraduate Degrees between 2005 and 2010

Gender	2005	2006	2007	2008	2009	2010
Male	46.5%	46.2%	45.9%	44.8%	45.3%	45.2%
Female	53.5%	53.8%	54.1%	55.2%	54.7%	54.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

(UCAS, 2011)

APPENDIX B

Gender of HE students by level of study and domicile 2009/2010



(Source: HESA, 2011)

## APPENDIX C

### Student research project panel (SRPP) email of approval

**Sent:** 05 May 2011 11:36

**To:** J.A.McMullan'; 'jennymcmullan'

**Cc:** Research-Ethics

**Subject:** RE: Revision for Jenny McMullan's submission to IET-SRPP - 2011/029

Dear Jenny

Thank you for your careful consideration of the Panel's feedback and I'm pleased to report that SRPP approval has now been given. This approval is of course dependant on X (*the Ethics Panel*) being happy that the additional information you supplied does not impact on your original HPMEC approval and the Research School do not raise any concerns. Please also be aware that the Research School do need to supply a sample for X to check before any students can be approached – it has been requested.

There is only one small point to report and that is to add an additional option of replying via email to the consent form (please return the completed form to...). Having to reply via post may put some people off. When you are dealing with consent via email the only additional thing to add is to get participants to confirm that they are the person to whom the email is addressed (some people share email addresses and this covers the data protection aspects of the permission).

If you have any questions or would like further information then please don't hesitate to ask.

With best regards

Student Research Project Panel Coordinator

Student Statistics and Survey Team

## APPENDIX D

### Ethics committee emails of approval

HREC\_2011-#907-McMullan-1.doc

This memorandum is to confirm that the research protocol for the above named research project, as submitted for ethics review, is approved by the X Human Research

Ethics Committee by Chair's action subject to a successful outcome of your SRPP application.

Regards,

Chair OU HREC

Date 17 March 2011 Memorandum

-----  
Dear Jenny,

Thank you for copying me into the SRPP communications. I have read all the original documents that you submitted to HREC along with the following updated documents;

- Email/letter of Invitation to students
- Participant's Consent Form
- 'Women's Writing and Widening Participation in the UK' proposal
- Note of support/permission from my Supervisor.

I can confirm that your project conforms to the HREC ethics guidelines and that the approval memo HREC/2011/#907/1 dated 17 March 2011 is unaffected, with one proviso;

*"at the conclusion of your project, the Committee would like to receive a summary report on the progress of this project, any ethical issues that have arisen and how they have been dealt with."*

Regards,

Chair HREC



## APPENDIX E

## Letter of invitation to participate in the research project

Dear Student-Researcher

I'm a full-time research student from the Open University researching academic literacies and writing in higher education (HE). My Supervisors are Dr Theresa Lillis and Dr Lucy Rai.

I am researching **female students who are writing research** in a range of disciplines, from Social Sciences through to Science, Technology, Engineering or Manufacturing (STEM), in UK, HE.

I'd be interested in hearing your ideas about writing at University, and I'd be happy to travel to a location convenient to you, at a time that suits you.

Although I'd like to talk to female research students generally, It would be great if you could get in touch if:

- You did not enter an undergraduate degree in the UK straight after secondary school or sixth form (perhaps you worked before starting university; completed a university entrance course before doing your undergraduate degree – or studied in a different country).

If you're interested, you'll be invited to bring a piece of your writing to an interview, in the summer, on a day that suits you (your identity, and writing, will be kept confidential – see Consent Form). This interview may be done over the phone or in person, depending on what is best for you (if we do the interview over the phone, I may ask you to email me your writing, but your work will be kept confidential). The interview will take no more than one hour. In the interview, you'll be asked to talk about your own writing and experiences related to writing in HE

You'll also be invited to write a 1 to 2 page, informal, diary-entry (approximately every three months) or keep an audio-log (the tape recorder will be lent to you). In these entries, you will reflect about on your writing practices in HE (you would be given a few questions to think about and they'll come from the questions asked in the interview), and, again, all reasonable precautions will be taken to keep your identity confidential.

Finally, because I'm interested in the many different ways we write (not just 'formal' writing), I may also ask if you would allow me to accompany you as you go about a 'regular' day, just for 1 to 2 hours on a morning or afternoon, but this part would be completely voluntary.

I will make sure that you volunteer no more than 3 hours, in total, every 6 months.

I hope you're able to consider participating, as the interviews, and short diary entries, have been designed with the intention of providing a space for you to reflect on your writing, and studies, in a relaxed and enjoyable way. In addition, many teachers, students and researchers argue that 'creating space' to reflect on 'writing' can positively affect the quality and productivity of one's 'writing'.

Again, if you choose to remain anonymous, precautions will be taken to ensure that your identity is kept confidential.

Any questions and enquiries are welcome. Feel free to contact me for an informal chat at [j.a.mcmullan@open.ac.uk](mailto:j.a.mcmullan@open.ac.uk) or on 01908 858 984 or 07988609788 to discuss any aspect of this research.

Kind Regards  
Jenny McMullan

APPENDIX F

Participant consent form for the research project

Further analysis of postgraduate students' experiences of writing

If you are willing to take part in this research project please tick the box, complete the details below and return the signed form. At any time during the research you are free to withdraw and to request the destruction of any data that have been gathered from you, up to the point at which data are aggregated for analysis.

Your participation or non-participation will not affect your access to tutorial support or the results of your assessments.

The results of any research project involving *X (name of university)* University students constitute personal data under the Data Protection Act. They will be kept secure and not released to any third party. All data will be destroyed once the project is complete.

☐ I am willing to take part in this research, and I give my permission for the data collected to be used in an anonymous form in any written reports, presentations and published papers relating to this study. My written consent will be sought separately before any identifiable data are used in such dissemination.

Signing this form indicates that you understand the purpose of the research, as explained in the covering letter, and accept the conditions for handling the data you provide.

Please tell me the best way to contact you to arrange a time and date for this interview, could you include full details eg, full telephone number or email address:

.....  
.....

**Name:**.....

(please print)

**Student PI:**.....

**Signed:** .....

**Date:**.....

**Please return completed form to:**

j.a.mcmullan@open.ac.uk (If emailing, please also type in a short note above saying that you are responding to an invitation emailed to you about women writing research)

or post to

Jennifer McMullan  
The Open University  
Stuart Hall, Level 3  
Milton Keynes  
MK7 6AA  
UK

**For any enquiries please contact J.a.mcmullan@open.ac.uk or 01908 858 984 or 07988609788**

## APPENDIX G

## Diary instructions; diary template and map used to analyse the diaries

## Diary instructions

20<sup>th</sup> of June 2011Re: Women Writing Research Project: Part 2

Dear X

Thanks for your recent interview, it was really helpful and has provided me with very interesting data for this project. Before I submit my initial thesis this September, I was hoping to experiment with a small journal-type activity. My aim is to lend you a recording device next year, but I would like to run a trial before I apply for the funding to do this. In this trial, you can choose to type in (or 'journal') your thoughts in the table below, or record yourself on your computer and send the audio file/s to me. (You may need to email me the audio file as an online file, or use drop-box and send me a link – audio files are sometimes too big to send in a regular email).

In this activity, could you please *free-write* (or record) your thoughts **about the next piece of writing you are thinking about or planning for, or a piece you are currently working on**, for your research or postgraduate studies. Examples could be: a research proposal, chapter of thesis, an application for funding, a methods assignment, a research journal entry, or even preparing an email for your supervisor.

The idea is to get 3 to 5 entries of a few minutes each over a period of a week, so I can get a sense of how you 'think' and 'feel' about the writing task as you are preparing to write it, or as you are actually writing it. I am also interested in how ideas might change over time.

Below is a table for each diary entry – you can spend as long as you like on each entry (or as little time as you like, because I know how demanding your schedules are!). As I mentioned before, if you do not want to write, and would like to record yourself speaking, please just 'talk' the entries into your audio device and send me the audio files.

In order for your thoughts to form a part of the September 2011 thesis, I would need to have your comments back by the end of June, 2011. I hope you are able to fit this into your schedule, because I am really looking forward to reading/listening to your ideas, and seeing how these 'add to' and 'flesh out' the thoughts you expressed in your interview.

As always, your time is greatly appreciated, (I will not be asking you to do anything else before next year - I hope this does not interfere with your schedules too much, and that you find it valuable for your own research).

Warm Regards,  
Jenny McMullan

Diary template

Entry 1	Entry 2	Entry 3	Entry 4	Entry 5
<p>What is the date and time? Please briefly describe where you are.</p> <p>Briefly describe the piece of writing you are working on (e.g. research proposal, chapter of thesis, application for funding, assignment, or even preparing an email for your Supervisor etc.)</p> <p><b><i>If possible, please discuss the same piece of work in each entry.</i></b></p> <p>Please describe any challenges or issues you are having that are related to this piece of writing. How might you tackle or address these issues?</p> <p>If relevant, please describe any interaction/s you have had with anyone over this piece of writing and anything that arises from reflecting on this (these interactions could be informal or formal conversations with – or feedback from - a peer, supervisor, friend or colleague).</p> <p>Please describe how you are feeling about your own writing/planning/thinking at this stage, and try to explain why you might feel this way.</p>				

Map used to analyse the diaries

Date and Time	Feeling recorded by P4 in the journal task <sup>19</sup>	Isolated Efficacy Beliefs	Self-Contextual Factor 1	Contextual factor 2	Contextual Factor 3
20 <sup>th</sup> of June 2011 4.00pm	I feel very sad and somewhat depressed that the uni does not want me. I am worried I might not get the results expected from my analysis. Perhaps I am not good enough.	Perhaps I am not good enough.	P4 at daughter's house. Discussed the transcription of 6 interviews with daughter.	PhD funding turned down	
21 <sup>st</sup> of June 2011 10.35am	I am still worried I will not analyse this material well enough – in (name of university department) we never covered thematic analysis, have only learned about discourse analysis & conversation analysis. Am hopeful that Supervisors will give good feedback....so I can re-write well enough to pass M Res.	I am still worried I will not analyse this material well enough.	Working alone in her home.	Waiting for feedback from Supervisor.	Computer has a virus and this means she can not work on her computer. Decides to use her computer but says there are, 'endless challenges'.
22 <sup>nd</sup> of June 2011 12 pm	I have a definite plan to complete the themes...I am happy that I will complete the M Res – I have overcome earlier depression about it.	I do not believe I am doing this the correct way but it is the only way I know.  I have overcome earlier depression about it.	Decides to follow her instincts and write her analysis in the only way she knows.		Working at home alone

<sup>19</sup> P4 is completing a thematic analysis of her data for her Masters in Research thesis and then moves onto writing her final Interpretation and Findings chapters of her MRes thesis.

Date and Time	Feeling recorded by P4 in the journal task <sup>19</sup>	Isolated Efficacy Beliefs	Self-Contextual Factor 1	Contextual factor 2	Contextual Factor 3
23 of June 2011	I feel lost now (?) has to do Interpretations and Findings – wish I had been taught something about all this. Not surprising failed PhD funding.	I feel lost now ...Not surprising failed PhD funding And My analysis and data is not really strong enough to do this M Res without far more experience.	Feels that she has not been taught what she needs to know.	Having difficulty finding the literature she needs	Working at home alone
24 <sup>th</sup> of June 2011	Would have asked Supervisors about 'interpretation' and 'findings' but will do without. Planning is still very good, am always conscious of time constraints. Am thinking maybe I am no good for PhD. Used to feel confident. M Res and uni have made me feel very dispirited. Will complete M Res though.	Planning is still very good And Am thinking maybe I am no good for PhD. And Used to feel confident. M Res and uni have made me feel very dispirited.	Thinking about a plan to do outstanding work.	Still waiting for the return of her computer.	Decides to not ask for help from Supervisors, even though she feels she could do with it.

## APPENDIX H

### Transcription Key

Key:

... **(inaudible)**... A phrase or short stretch of text that can't be understood

**(?)** Placed directly beside a single word (no space used) that can't be heard clearly.

**(?)** Is also used to replace a single word that can't be heard clearly – in this case, a space occurs on either side of the symbol.

***Italics*** are used to describe gist and general sense of a stretch of text.

...is used to show a pause.

**(A number in brackets)** refers to position of the word or phrase in the audio e.g. (35.0) = words spoken after 35 minutes of conversation.

**APPENDIX I****Questions used for the 'Talk-around-Text' Interviews**

The Draft Questions are below and are grouped into three categories:

- A) Getting to know the participant and opening the discussion**
- B) Memories of writing or literacy history**
- C) Student writing and writing in the academy – reference will be made to actual texts**

**Before each interview begins the researcher open the interview with the following statement.**

It is understood that writing is a process, and that one's ideas, approaches and practices change. It is also understood that many of your answers may relate to specific writing projects, so wherever possible, it would be good if you could try to give an example related to your answer. If there is a particular question you would not like to answer, just let me know and we will move on. Thanks for participating.

**A. Getting to know the participant and opening the discussion (briefly getting to know the person and introducing the topic for discussion).**

- Thank you very much for coming today. Could you please tell me your name, date-of-birth and preferred contact details? Could you also tell me what languages you speak and your nationality? Would you like to comment on your ethnicity or religion? (The interviewer will refer back to the invitation letter to demonstrate that the candidate will remain anonymous if she chooses).
- Have you brought a written text with you today? Would you mind if I made a copy? Could you briefly introduce your academic discipline and this piece of writing?
- Could you describe a place where you write? What does it look like? Why do you write there?
- Could you give a couple of examples of how 'writing' fits in to a normal day for you?

**B. Memories of writing or literacy history**

1. Could you give a brief overview of where you went to school and college or university? Could you give an example of a positive and/or negative experience you had at school related to reading or writing?



2. Do you remember any particular experiences, related to reading or writing, when you were at home as child or young adult? Could you share a couple of your memories?
3. Do you feel that your current home-life, relationships, or friendships have an impact on your writing at university? Could you give a couple of examples?
4. Have you written personally, or creatively? Could you give some examples of times in your life when you have done this and what this type of writing has meant to you?
5. Could you tell me a little bit about your specific journey into university, and into research? How have you come to be a student-researcher? Could you comment, generally, on the way writing has, or has not, affected that journey?
6. Is there anything you would like to add, or write, related to the things we have talked about? Feel free to take a few minutes to gather your thoughts.

**C. Writing in Academia and Student Writing – *references will be made to actual written texts and one or two relevant questions from the five areas below will be chosen for this part of the interview.***

**1. Writing as craft.**

- Could you say a few words about the practical things you do when writing for, and in, university? For example, what kind of practical steps do you take to craft your original ideas into the final stages of an essay, or article, for example?

**2. The Research tradition.**

- Do you consider yourself to belong to a research tradition of some kind? Could you explain a little?
- If relevant, can you give a couple examples of specific writing traditions or 'rules' in your 'academic' area? Are there rhetorical features and textual strategies mark your work as scientific or academic? Could you give a couple of examples? What do you feel are the advantages and disadvantages of these 'traditions' or 'rules'?
- Are there specific academic debates or arguments that inform your discipline? If so, can you give an example of how you show these in your writing? Does this present any challenges or problems for you? If so, why?

**2. The nature of reality: Issues of epistemology and ontology.**

- Are notions of 'reality' and 'truth' dealt with in your writing in any way? Can you give one or two examples of how are these ideas about reality are represented in the text?
- Do you experience any difficulties or challenges when writing about issues related to reality and truth? Why?
- Can you give examples?

**3. Aesthetics or 'creativity'.**

- What creative, aesthetic or artistic considerations do you think are appropriate in terms of the subject domain you are writing?
- Do you consider yourself creative in the way you write? What factors affect how 'creative' you feel you can be? Why?

**4. *Who is in the text? Self and other.***

- Do you consider yourself to be *in* your writing in any way (this could relate to the notion of 'voice' or 'author')? If so, how? Can you give a couple of examples?
- Do you feel there are any challenges or tensions around how you express yourself in your writing at university? Why?
- Would you like to comment on any aspect of the way that you write about 'yourself' or 'another' in your academic writing? Can you an example?

**5. *Politics, power and participation.***

- Do you feel that your writing may have an impact on the lives of others in any way? If so, how? Could you give an example/s?

**6. *Gender.***

- Do you feel that your writing in HE, or your experiences of HE generally, have been unique in any way because you are a woman? Could you give examples?

Is there any other comment you would like to make at all about what we have discussed?

Thank you.

APPENDIX J

An overview of the categories through which the data was analysed  
and a participant's interview mapped against these categories

Bandura's Hypothesised Four Sources of 'Self-efficacy Beliefs'	
Mastery Experiences	<p>P1: <i>On writing research in Italy</i>: It's more, it's not you know, you can't just quote everything, but it's allowed much more than in the UK so you can say, 'look this is what is the authority on the topic says, so why should I even bother trying to re-write it, that's it, that's what you want to know. My job was to find the quotation that applies to this case and I can just move on to the next one, so I tend to write long quotations, I tend to use the authority of my literature much more than I should. And, again, usually, you're not really expected to write and sometimes, it's really forbidden, in a way, to write what you think. Never ever ever start a sentence with, 'my view of this topic is that', 'my view of this issue' or ' my research leads to these conclusions', no, no, no, no, that's not, maybe after you have a PhD, if you write a paper, after you have a PhD than, yes, you can start...</p> <p>J: You have that flexibility.</p> <p>P1: But up to when you have a research degree in your hands it's not really encouraged</p> <p>But up to when you have a research degree in your hands, it's not really encouraged...</p>
Vicarious Experiences	<p>Nothing recorded for this participant</p>
Forms of Social Persuasion	<p>P1: but for me the biggest obstacle is the way that I would write ah research if I were in Italy and the way that research that needs to be written in the UK, because they are different, of course, you know the basic requirements are the same, you know, you have to write something that is clear and precise and you have to have the sources right and you have to present the sources ah in a meaningful and correct way, so the ground rules are the same, you know the (?) methods are the same, but in Italy we write differently, so for me every time I have to write something just to have an idea of what I want to write and then I have to go over it again to check if I'm writing it for Italy, a hypothetical Italian reader, or if I'm writing it as I should for a Supervisor in the UK. And I</p>

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always have to do that, and I've always had to do that when I was doing the Erasmus project, when I was doing the Masters at LSE, or the previous courses at the Open University. I always had to do that because if I don't and it, disaster strikes - I remember once in the (ok that was not research writing, that was just a paper) for a course, but when I was doing the Masters at the LSE, I wrote a paper about the, I think the topic was how the Nation State came to be in Europe and the lecturer ah who is an amazing lecturer and he knows everything, almost, and most of all he knows the difference, he knows very well the difference between writing in Italy and writing in the UK, so he gave me, I think it was a 57, I was not very happy with and he said, 'Look this is, if we were in Italy this would be excellent, but we're not so re-write it'. So I went back, I re-wrote it, I didn't look at the sources again, I didn't have to check my facts again, I didn't have to, you know, go to the papers again, I just had to re-write it in the way that was acceptable in the UK.

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*On teaching how to 'write' to Italian students in Italy:* So the students wanted to know how to write and I was saying, 'ok, you have to have you know a really good structure. You have to plan blah blah blah'. And then I was saying, I wanted to say that, and I was on Skype and the professor I work with was in the room with the students and I said something like, 'Then I have to tell you a few things about the Conclusion'. And when I stopped talking the Professor said, 'You are not allowed to write any conclusions because you're just undergraduate students. So you're not supposed to be able to draw any conclusions from anything. Just report.

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P1: No no no, I'm fine, my husband supports me in the sense that he really wants me to be happy and to, you know, to find what I want to do, which is really nice. I feel the love. But from a practical point-of-view Ahh not exactly,

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P1: Also my problem is maybe a trivial thing, but I would like my work to be recognised as something that might have a little bit of value for historians, so for me it's also a problem of legitimisation in a way, but I have to write something that will get me through the Ed D.

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P1: But up to when you have a research degree in your hands, it's not really encouraged, you know this kind of language is really not very, terribly ok. So for me it's always hard, my Supervisor says usually every time, that I need to use 'I' because that's what I'm doing, but I find it really really hard because that's not what I am comfortable with, and it's easier you know when you're writing an essay for like a Master degree, it's not your research, so it's not that necessary, but if you're writing about your research and what you're doing, of course you have to put yourself at the forefront of the writing because it's your writing, your research, but it's a very different style that is required in Italy...

<b>Emotional and Physiological Indexes</b>	P1: But it's not like 4 hours in a row. Maybe one hour one day and maybe two hours Saturday evening and maybe half an hour Monday morning and it's really really hard, so I'm always almost beyond, sometimes I'm beyond the deadline and that really really hurts my writing because, especially because I'm a foreigner, because I (?) come from a different world. I really need to write and then let the piece of writing rest for a little bit and then come back to it later, but I very rarely get to do that because I usually write, you know, 'I've got 20 minutes. Oh my god'.
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<b>Resources: Financial, Time and Physical environment</b>	<p>P1: But there was, because I had like I was in a foreign country, I mean most people speak English in Cyprus, but not everybody and not very well, and, I had a 18 month old and a newborn baby and I was by myself.</p> <p>J: Oh, you're amazing. Oh my goodness.</p> <p>P1: but with my husband, but he was working like 12 hours a day.</p> <p>J: Yeah yeah yeah</p> <p>P1: Yeah and there's no support, no parents' association, no nothing zero, so at that time I really felt it was good when I was able to finally put both of them to bed or they were maybe playing for five minutes by themselves. At that time, I really liked having a chance to write a few things, just a few thoughts that came to my mind, so I did that for about a year and that was it.</p>
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P1: In 2004 I moved to Australia and since I was, I couldn't really find a full-time job, and I was expecting a baby so I was home a lot of the time so I said well, 'why don't I just do another course so at least I learn a bit more'. I did my second course and then we moved to Cyprus and again the same thing. I wanted to try and finish the Masters, really, and since it's quite easy to just keep studying at the X University because of the, because I didn't have to go anywhere, well I was already somewhere, but I stayed in Australia and Cyprus for a limited period of time, so there's not enough time to enrol in a, you know in a full-time class, course, so I ended up finishing the Masters, so when I finished the Masters, I thought well, why don't I try and apply for the EdD.

**'Writer-  
Identity'**

**Source: (Lillis,  
2001)**

***Who can you be? - Who do you want to be? - Authority***

P1...also my problem is maybe a trivial thing, but I would like my work to be recognised as something that might have a little bit of value for historians, so for me it's also a problem of legitimization in a way, but I have to write something that will get me through the Ed D.

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***How can you say it? - How do you want to say it? - Authorial Presence and What can you say? - What do you want to say? Authorship***

P1: ...and it's also a huge cultural problem because in the UK and in the US historians are not afraid to talk about the methods and to discuss different theoretical perspectives from their point of view, so in the UK Anglo-Saxon world, I can find a lot of debates about postmodernism and the linguistic turn and the cultural turn and so on and so forth. In Italy it's really hard to ask a historian, ok, what is your theoretical perspective? What is your point-of-view? Because they always, because we still have, very polarised umm frame of mind so historians in Italy are either Marxist or non-Marxist, still like (?).I'm a historian. I don't know if that is...So you're supposed to know from a historian from what he or she write from her or his perspective, you're supposed to just understand.

J: Yes, I understand, yeah.

P1: You don't usually go to a historian and say, ok, are you Marxist? Or are you, you know? Because they think they're

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not supposed to show it ah very clearly so you're supposed to understand from their writing

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P1: I write a theory like a social science theory on digital history then I wonder whether I'm losing the perspective of the historian and then if any historian ever reads my research maybe they will not find anything interesting. Maybe they will think, you know, it's like some doctoral research in lab rats (?), but I don't want to be a rat.

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## APPENDIX K

### An extract from a transcript of P3's 'talk-around-text' interview

J: ...so when you say analytical, that's the sense that I'm getting, you mean that that you/one is able to draw on many different sources of information and apply them in a particular context?

P3: Yeah and to take elements of what you're reading and say oh ok well this relates to the situation what I'm working in, but that bit doesn't... (inaudible)... to break it down umm and be able to just draw out the elements that you need and perhaps you know different elements, as I say...(inaudible)... synthesising those things together creates, you know, something that works for the particular situation you're looking at

J: That is, that is one thing that I've found really interesting in your essay, is that as well as applying the different things that you're read, you were quite good at umm making sure you were critical about what you'd read, so you know this study worked for this reason, or this study didn't...

P3: Yeah

J: is that something that developed over a long time, or?

P3: Of course, I think that that is an increasing trend in nursing as well, so it's something I'm having to do within my teaching as well as in my own study, I mean, when I qualified to be a nurse, I was taught what to do and I did it because that was because I was told to do and I probably did question things that was a little bit more than the norm. I would sometimes say why do we do that, what happens you know if you don't sort of thing umm, but it wasn't really an expectation then, it was very much a case of you know, you were taught what to do and you were expected to do it umm I can remember for example I think I was a third year student nurse and it was common practice to use sterile packs of Femeldicare and I can remember saying to (?) why do we use sterile packs to clean people's teeth if when normally you would just use a toothbrush which isn't sterile and it was very much because that is the procedure and what we do and of course challenging that is very (?), but is it really necessary umm was not common place, whereas now we would expect even our student nurses to not only know what to do, but to be able to give a rationale for why they're doing it and what would be the implications of not doing it and is there another way it could be done that would (?) and that constant sort of questioning and challenging I think is now the norm and I think that is a good thing, and I think I've acquired it partly through my own personal studies but I think really I've almost acquired because of needing to be one step ahead of what we are expecting of our students, so it's almost a learning on the job thing.



**APPENDIX L****A participant's written text (P3) used in a 'talk-around-text' interview**LITERATURE REVIEW

This section is a review of relevant literature related to the research questions why, when and how does numeracy anxiety develop in some healthcare students? An extensive literature search has been undertaken initially using the Education Resources Education Centre (ERIC) and Cumulative Index of Nursing and Allied Health Literature (CINAHL) databases. Several texts were sourced, read and then further sources identified within those texts were followed up, read and so on. The terms numeracy, maths and mathematics (and math in the USA) are all used within the literature related to anxiety related to number manipulation. The term chosen for this study is 'numeracy' as this most closely reflects the skills that students need to demonstrate within their clinical practice, although the majority of the literature relates to 'maths'. The wider terms 'mathematics' or 'maths' will be used where they are used by the original authors, as a change to the narrower term numeracy could alter the context and meaning of the original material in some cases. The literature review is focussed on and around the issue of anxiety related to numeracy or maths, but also explores wider related issues such as anxiety generally and the wider teaching and learning of mathematics.

It is widely recognised that numeracy anxiety does exist and that it is a significant problem amongst healthcare students (Hutton 1998, Sabin 2001, Glaister 2007) and there is extensive recent and current research aimed at developing strategies to help overcome this problem (Farrand et al 2006, Moriarty et al 2008, Bull 2009). However when trying to focus a literature search around the specific questions of why, when and how numeracy anxiety develops in some healthcare students, there appears to be a paucity of specific literature and that which does exist reflects opinion and anecdotal evidence rather than research based findings. The search has therefore been expanded to include more general literature on numeracy anxiety related to settings other than healthcare. What the literature does suggest is that there is a clear link between numeracy anxiety and performance in numeracy tests (Bull 2009). Gladstone (1995) echoes the concern of many that, within the healthcare professions, a lack of maths ability can lead to drug calculation errors in practice, although Wright (2010) in a review of the literature on medication errors challenges this assumption, arguing that she found insufficient evidence to suggest that medication errors are caused by nurses' poor calculation skills. Nonetheless, if healthcare practitioners are required to calculate medication doses for their patients, then sound calculation skills, and well-placed confidence in those skills must increase the chances of accurate doses being administered and will therefore contribute to improved patient safety. From my own experience I have become aware that in some cases the students' underlying mathematical ability is sound but their level of anxiety prohibits them from using their skills

appropriately. This reflects the findings of Arnold (1998) who found that the vast number of mistakes that nurses made in maths assessments were conceptual in nature, in that they failed to set up the problem properly. For example when presented with a drug calculation problem they were unable to extract the correct information to set up the problem to be solved. Arnold claims "there was nothing wrong with their arithmetic skills". Such students need more than good teaching strategies and, in some cases where anxiety is deep-seated, the support required is tantamount to counselling. However, prevention is better than cure and the proposed research will focus on exploring the origins of this anxiety and whether strategies can be developed that avoid such anxiety being created in the first place, or at least neutralise it in the early stages of further study. It is often suggested that bad experiences and poor or inappropriate teaching strategies are to blame, but numeracy anxiety is widespread and it is likely that there are many factors which have an impact and that these will vary from one individual to another.

### Definitions

The term *numeracy anxiety*, or *maths*, *mathematics*, *math anxiety* refers to the negative perception that some people have about 'doing maths'. (National Research and Development Centre for Adult Literacy and Numeracy (NRDC) 2009). It is defined as the feelings of tension that interfere with the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and academic situations (Richardson and Suinn 1972, Tobias 1993).

When considering *how* numeracy anxiety develops in some healthcare students it may be helpful to have a more general understanding of anxiety and its potential origins. Anxiety is a normal phenomenon that within defined parameters and under the right conditions serves as a protective and even a performance enhancing response to potentially stressful situations (Turner 2003). Turner goes on to explain that normal anxiety is the sympathetic nervous arousal that precedes and is part of the 'fight or flight' response. In other words, it reflects the psychological and physical state required to deal with an emergency and is a normal way of reacting to a number of demanding situations. However, morbid or clinical anxiety is a state where the level of anxiety and the associated physical and psychological effects exceed those required to deal appropriately with the immediate situation. According to Turner (2003) and Rachman (2004) there are a whole range of factors which could be identified as potential causes of anxiety. Anxiety is often acquired by a process of learning (Rachman 2004) and childhood experiences are a common factor associated with anxiety related to a particular situation. Therefore for healthcare students who experience numeracy anxiety, it might, in some cases, have originated from a past experience, and / or their personal interpretation of that experience. From my own practice I have discovered that some students can identify very specific experiences, which they believe to be the origins of their numeracy anxiety, although I recognise that this may not always be the case. Within the literature there is a wealth of information and opinion regarding anxiety generally, and how to manage various forms of anxiety, but there appears to be little specific research undertaken into the origins of numeracy anxiety. Ashcraft and Moore (2009 p197)

support this perception, arguing that "given the wealth of information about correlates of maths anxiety, it is somewhat surprising that little if any research has been reported concerning its onset or possible causes". There does appear to be a gap in the literature, which justifies the focus of the research questions in his study.

Whilst numeracy anxiety is very much a current issue it is not a new phenomenon. As far back as the 1950s there were reports on emotional difficulties with maths (Gough 1954) and numerical anxiety (Dreger and Aitken 1957). Richardson and Suinn (1972) identified widespread maths anxiety in the 1960s and developed a Maths Anxiety Rating Scale (MARS) as a tool to measure its prevalence and enable it to be more widely explored. Hembree (1990) noted that such anxiety was prevalent in US college students at the end of the 1980s and the Dearing Report (NCIHE 1997) acknowledged that numeracy was still perceived as problematic in the 1990s and called for Higher Education Institutions (HEIs) to develop strategies that would enable them to deliver numerate graduates. Therefore many HEIs, including my own, are currently looking for ways to support students in developing their numeracy skills. For many students in the Faculty of Health this means addressing the deep-seated anxiety that they experience when confronted with the concept of maths.

#### Who is at risk, and when?

Numeracy Anxiety appears to be an international problem and has lead to the production of literature from countries such as the USA (Scarpello 2007, Geist 2010) Sweden (Kapborg 1994) Germany (Krinzinger et al 2009) Turkey (Ader & Erktin 2010) and Singapore (Kai Kow Joseph 2004) as well as from the UK.

There is some evidence of research exploring the question of *when* maths anxiety develops. Scarpello (2007) claims that 'math' anxiety can begin as early as the 4<sup>th</sup> grade (USA), but peaks in Middle and High School, although he does not provide any justification for this claim. Arnold et al (2002) argue that negative attitudes towards maths start to develop much earlier, even before Kindergarten (USA) whereas Geist (2010) argues that it is when children enter formal schooling that problems start to develop. She explains that children start to construct their ideas about maths from the first few months of life, but that on entering school the focus shifts from the construction of ideas to "teacher imposed methods of getting the right answer". This includes a focus on repetition and speed (timed tests) which undermines the child's natural thinking process. So the answer to the question of when numeracy anxiety develops in some healthcare students may be for some 'in childhood', but there is clearly no agreement on specifically when during childhood anxiety may originate. Geist (2010) has identified the emphasis on 'getting the answer right' as being problematic for some children, and I would argue that this remains true for many adults. It is certainly the expectation that healthcare professionals, and therefore healthcare students, are expected to get the answer right every time. Within the university the students' abilities are assessed by timed tests, and it is a constant topic of debate as to whether anything less than 100% pass mark is acceptable, so it seems to me that healthcare courses are

reinforcing this undermining focus. However, by this stage students are adult learners and should theoretically be able to adapt their learning strategies if they have sound foundations on which to build. Mackenzie (2002) undertook a study of the level of maths anxiety amongst the students attending the HE college in which she was working. She asked about the students' enjoyment of maths at various stages of schooling. Of 466 respondents, 73% claimed to have enjoyed maths at primary school but this had dropped to 48% by secondary school. 25% admitted to some current concern and avoidance of maths learning. Mackenzie notes that this figure is consistent with other studies such as those carried out by Betz (1978) and Hembree (1990). However she also claims that this figure is likely to be an under-representation of actual levels of maths anxiety based on the assumption that students who are interested in and comfortable with maths are those most likely to return the questionnaire (the return rate was 42%). Whilst this could be true there is absolutely no evidence to support this assumption. One could just as easily argue that those concerned about their maths ability are more likely to respond in the hope that responding may precipitate help and support with addressing their concerns.

Geist (2010) claims that those most at risk of maths anxiety are females and those from low socio-economic groups, although Mackenzie (2002) argues that her study did not indicate that anxiety and low confidence are gender-linked and OFSTED reports show that achievement levels for maths at GCSE show comparable levels of attainment for boys and girls. However I can find no studies that have specifically compared achievement at GCSE with levels of numeracy anxiety in the candidates. If the argument that maths anxiety and maths ability are linked is true then comparable achievement rates would suggest that anxiety rates are also similar. However, Sabin (2001) maintains that there is a gender difference, and argues that mathematical ability is socially constructed and that women are much more likely to underestimate their maths ability and therefore be more prone to numeracy anxiety. This lack of consensus suggests that any links between gender and levels of anxiety warrants further investigation.

### Signs and symptoms

Maths anxiety reactions can range from mild to severe, from seemingly minor frustration to overwhelming emotional and physiological disruption (Ashcraft and Moore 2009). People can experience maths anxiety in formal settings such as in a classroom or exam situation or in more everyday settings such as shopping or settling the bill in a restaurant. Signs and symptoms include panic, a feeling of helplessness, paralysis and mental disorganisation (Tobias and Weissbrod 1980), and whilst numeracy anxiety directly influences a student's confidence (Tobias and Weissbrod 1980), a lack of confidence is itself considered to be a factor in further exacerbating numeracy anxiety (Dodd 1999). It is essential for healthcare practitioners to be confident and competent within their clinical practice, which may include critical tasks such as calculating medication dosages, so numeracy anxiety in these individuals can create significant problems. Krinzinger et al (2009) identified that math anxiety in children may exert considerable

negative effects on their academic and social life, and there is no reason not to presume that this would be equally true of adults. It is widely recognised that maths anxiety, like other types of anxiety and even phobias, influences individuals on three different levels, physiologically, psychologically / cognitively and socially. Physiologically sufferers may experience sweating and rapid heart rate, palpitations and or nausea. Psychologically they may experience what Richardson and Woolfolk (1980) describe as "worrisome thoughts". It is these worrisome thoughts that are likely to lead to avoidance behaviour. This may help to understand *how* numeracy anxiety develops in some healthcare students but doesn't really help in understanding *why*. Hopko et al (1998) recognised that worrisome thoughts are hard to inhibit and will therefore absorb working memory and attentional resources. They call this a "deficient inhibition mechanism" and suggest that the poorer calculation abilities of individuals with high maths anxiety are not so much a consequence of their worrisome thoughts but are more likely due to an inability to withdraw their attention from these thoughts. This is supported by Ashcraft and Kirk (2001) who found that students with higher levels of math anxiety displayed lower working memory spans for numerical tasks, along with longer reaction times and higher error rates. Socially, individuals with high math anxiety levels are likely to avoid social situations that require maths such as working out their share of the bill in a restaurant. Ashcraft and Moore (2009) stress that math anxiety is a significant impediment to math achievement and one that affects a considerable portion of the population, and therefore warrants serious attention in terms of both assessment and intervention. They go on to argue that whilst math anxiety is not a learning disability in any traditional sense of the term, it does function as a disability in that it has negative personal, educational and cognitive consequences.

#### How numeracy/ maths anxiety is measured

The need for a tool to measure maths anxiety was identified back in the 1960s by Richard Suinn who was working at Colorado State University and recognised that different types of anxiety lead to different effects on the intellectual performance of the students he was working with. He also acknowledged that maths anxiety existed among many individuals who did not ordinarily suffer from any other tensions, and one third of the students responding to his university's behaviour therapy program indicated that their problem centred on maths anxiety (Suinn 1970). As a result he identified that a specific measurement tool was required to provide a measure of the anxiety associated with the single area of the manipulation of numbers and the use of mathematical concepts. This led to the development of the Maths Anxiety Rating Scale (MARS) by Richardson & Suinn (1972). The original MARS is a 98 item scale composed of brief descriptions of behavioural situations such as "adding together two three digit numbers while somebody looks over your shoulder". It is anticipated that such scenarios will arouse different levels of anxiety in different people. Subjects are required to respond with a numerical representation of their perceived anxiety with 1 representing "not at all anxious" and 5 representing "very anxious." The score is the sum of all the values. This is clearly a very subjective measure on the part of the participant, but anxiety is a subjective experience, and Richardson and Suinn (1972) undertook an intensive study to test and subsequently demonstrate the reliability and validity of the tool.

There does not appear to be any evidence of other independent researchers objectively testing the reliability and validity of the scale, but nonetheless it became a widely accepted measure and has been used in many subsequent studies. Whilst it does appear to be a valuable tool, the large number of items would make it rather complicated and cumbersome to administer in a classroom setting, and there is documented evidence of many researchers seeking a shorter or modified version of the scale. Several modifications were developed including a shorter 30 item version of the MARS (MARS 30-item) by Suinn and Winston (2003). Again they tested the scale for reliability and validity and were satisfied that the MARS 30-item scale was comparable to the original MARS 98-item scale. Again there is no evidence of independent testing of the reliability and validity of this modified version. There is also a modified version designed to better represent adolescents (MARS-A) by Suinn and Edwards (1982) and a 24 item version, the MARS-R was developed by Plake and Parker (1982).

However, despite the production of these revised versions of the MARS, there have been a number of further tools developed to measure maths anxiety. One such tool is the Abbreviated Maths Anxiety Scale (AMAS) developed by Hopko et al (2003) which is a widely accepted modified version of the original MARS, developed because of the perceived poor fit of the original MARS to large scale studies of undergraduate students. The AMAS is a 9 item scale which is simple to use, and particularly appropriate for larger scale studies.

#### Causes of numeracy anxiety

Ashcraft and Moore (2009 p197) point out that "given the wealth of information about the correlates of maths anxiety, it is somewhat surprising that little if any research has been reported concerning its onset or possible causes". In searching the literature I have been able to find very little evidence of structured investigations into the causes of numeracy or maths anxiety, although several authors do express opinions as to the causes. For example, Scarpello (2007) suggests that maths anxiety might be caused by past classroom experiences, parental influences and remembering poor past maths performance, but he does not provide any evidence to support this claim. He goes on to say that teachers need to be aware that students may suffer from maths anxiety and that they should employ effective teaching methodologies to lessen anxiety in their classroom. However, he offers no suggestions as to what these effective teaching methodologies might be. It is of little help to practitioners to advise them to do something, if they don't know what it is that they can do. Krinzinger et al (2009) recognises that whilst mathematical learning difficulties are often associated with maths anxiety, very little is actually known about the causal relations between calculation ability and maths anxiety. In an attempt to address this they undertook a study of 140 primary school children to longitudinally investigate the relationship between calculation ability, self-reported evaluation of mathematics and maths anxiety. Whilst their results showed a strong influence of both calculation ability and math anxiety on the students' evaluation of mathematics, they demonstrated no causal effect of math anxiety on calculation ability or vice versa. This certainly fits with my own anecdotal experience of students within the faculty of health, where I have noticed that some students with

apparently high levels of anxiety say they cannot do maths but can solve a problem using mathematical principles when the problem is not framed as a mathematical problem. This led me to suspect that for some students with maths anxiety, they genuinely believe they cannot do maths when in fact their maths skills are better than they believe them to be. Krinzinger et al (2009) do go on to speculate that frequent poor maths performance or failure to understand maths concepts might lead to negative emotions such as maths anxiety, which in turn is likely to provoke avoidance behaviour. However, the association between math ability and math anxiety may not be unidirectional in that emotional factors might generally influence cognitive abilities. There is undoubtedly some evidence to support the theory that maths anxiety influences maths performance, but as previously argued, maths performance in contrived settings may not be an accurate representation of ability. A meta-analysis by Hembree (1990) showed that successful treatment of maths anxiety in adults lead to a significant improvement in their calculation performance, even though their treatment did not involve any maths training. A later study by Kamann and Wong (1994) showed that reducing maths anxiety also positively influenced maths performance in children with mathematical learning difficulties, adding further weight to this argument. This evidence suggests that there is a cyclical problem here, with poor mathematical performance causing anxiety, anxiety causing avoidance of mathematical scenarios and this avoidance causing a further reduction in performance ability. It is easy to see how this cycle may develop into a downwards spiral making all three factors progressively worse. In order to devise strategies to address these issues, and attempt to 'break the cycle' it would be helpful to acquire some understanding of the origins of the anxiety.

#### Problems that numeracy anxiety causes in healthcare

Hembree (1990) noted that "otherwise capable" students were avoiding the study of mathematics and making subsequent career choices accordingly. This certainly fits with my own experience of healthcare students who have told me that they didn't expect to have to "do maths" on healthcare courses and that they might not have chosen these programmes of study had they known. Mackenzie (2002) noted from her study that students studying English reported the highest level of 'avoidance' of numeracy (40%), and it seems logical to surmise that these students might have chosen their course, assuming that mathematical skills would not be required. However she also noted avoidance levels of 33% amongst applied social science students, who in many cases may need to do maths as part of their programme of study, and within their subsequent practice, but they may not have realised this when applying. Most healthcare courses require a mathematics qualification equivalent to a GCSE grade C or above as part of the minimum entry criteria but many assume this is just a "standard" entry requirement and do not associate this requirement with an expectation that they will need to use maths within their programme of study or within their field of work.

The problem for nurses, along with other professional groups such as operating department practitioners and paramedics is that they need sound numeracy skills in order to accurately calculate medication for their patients. There have been several studies which identify that many

student nurses have difficulties with accurately calculating medication doses due to their underpinning numeracy skills (Hutton 1998, O'Shea 1999, Wilson 2003, Wright 2007), and these difficulties can ultimately lead to errors. Medication errors are defined by Wolf (1989) as mistakes associated with medications, medicines or drugs that are made during the prescription, transcription, dispensing and administration phases of preparation and distribution. O'Shea (1999) stresses that medication errors are a multidisciplinary problem but she acknowledges that whilst medicines are prescribed by the doctor and dispensed by the pharmacist, the responsibility for correct administration often rests with the nurse. In other clinical settings the responsibility may rest with other healthcare practitioners such as Paramedics or Operating Department Practitioners. Of course it is increasingly the case that now, a decade later, nurses and other non-medical prescribers are also responsible for prescribing as well as administering drugs, and although prescribing is an extended role for qualified nurses, there is still evidence of numeracy anxiety amongst post-registration students taking the non-medical prescribing course. Weeks et al (2000) point out that with this extended role and the increases in technology and the range of drugs available, the numeracy skills required by nurses are becoming even more complex and critical. Warburton and Khan (2007) add that with the expansion of nurse prescribing to include the whole British National Formulary, it is essential that all prescribing nurses can accurately calculate and check medication doses. I would argue that *all* nurses need to be able to accurately calculate and check medication doses, not just those with prescribing responsibilities.

A report from the National Patient Safety Agency (NPSA 2009) reported that there had been a significant year-on-year increase in the reporting of medication incidents from England and Wales to the National Reporting and Learning Service (NRLS) with 86085 incidents reported in 2007. It can be reasonably assumed that this is only 'the tip of the iceberg' and that in addition to these incidents there are many more which go unreported. The report goes on to say that medication errors were the third largest category (9%) of incidents reported to the NRLS with only 'patient accidents' and 'treatment/procedure incidents' scoring higher reporting statistics. Whilst 96% of the medication error incidents reported during 2007 had associated clinical outcomes of no harm or low harm, the NPSA received 100 medication incident reports of death and severe harm during the same year. Of these 41% were due to errors in medicine administration with a further 32% due to prescribing errors. 'Wrong dose' was amongst the most frequently reported incident types within these categories. This reflects the earlier 2004 report from the Department of Health which states that 25% of all litigation cases against the NHS were reportedly related to errors in drug administration (Department of Health 2004).

Numeracy is required in many other aspects of healthcare work, not just the calculation of medication doses, and all healthcare professionals need to use numeracy skills accurately within their practice. Therefore, numeracy anxiety is a potential problem for all healthcare students and practitioners, and so a multidisciplinary approach is required to address the problem and to reduce the incidence of errors in practice. O'Shea (1999) does emphasise that numerical ability is only one of a number of factors that can increase the likelihood of medication errors occurring



in practice with other factors such as workload, shift patterns and staffing levels also having a significant impact, but a number of studies have identified that medication errors resulting from the poor numerical skills of nurses is a perpetual problem. Bayne and Bindler (1988) identify mathematical proficiency as a prerequisite to the performance of many nursing functions such as medication calculation, but undertook a study which indicated that a substantial number of student nurses did not possess the basic mathematical skills necessary to function as Registered Nurses. More worryingly subsequent studies such as those by Warburton and Khan (2007) have shown that many registered practitioners also have inadequate skills. Bayne and Bindler's (1988) study suggested that the years of experience and educational background of Registered Nurses appeared to make no difference to the incidence of medication errors made by registered nurses, suggesting that the problem does not decrease with experience. However, Perlestein et al (1979) found that experienced nurses were more certain in their judgement even when they were wrong. This is supported by Ashcraft and Faust (1994) who identified that adults exhibiting high maths anxiety solved calculation problems faster, but less accurately than individuals without maths anxiety. For practitioners in a clinical setting this could have potentially disastrous effects. It must be noted that Wright (2010) in a review of the literature on medication errors claims that there is insufficient evidence to suggest that medication errors are caused by nurses' poor calculation skills, but even if this is true, it would be negligent to ignore the problem.

Ashcraft and Moore (2009) identify that math anxiety causes a decline in performance when maths is performed under timed, high stakes conditions, which they refer to as an "affective drop". To me this is significant for two reasons – firstly as the authors advocate, this suggests that maths tests such as those which healthcare students are required to pass will provide an under-estimate of true ability. Therefore students may be failing assessments inappropriately. Secondly, and more importantly, this suggests that individuals with maths anxiety tend not to perform well in stressful situations. In the clinical environment, nurses and other healthcare practitioners often find themselves in stressful 'emergency' situations where they need to function quickly and effectively, sometimes against a somewhat chaotic background of shouted instructions, urgent demands and even a sense of panic. An affective drop in performance during such an event could have life threatening and even fatal consequences.

#### Strategies to deal with / overcome numeracy anxiety

There have been many studies investigating strategies to improve the mathematical skills of nursing students (Hutton 1998, Wright 2007, Curtain-Phillips 2010) but none of the strategies tested were able to achieve a 100% "pass mark" for more than a small number of students. In clinical practice, healthcare practitioners must always achieve 100% accuracy in medication calculation, and the Nursing and Midwifery Council (NMC 2008) stipulate that all registered nurses need to be able to calculate medication accurately in order to safely administer drugs to their patients. Therefore, although many of the strategies advocated by these studies demonstrate a significant improvement, they are still failing. Most of these studies focus on teaching and learning strategies related to numeracy rather than the students' emotional

response to the subject, or their level of numeracy anxiety, which suggests that the current learning and teaching strategies alone are not enough.

It is clear from the literature that numeracy anxiety is a significant problem for healthcare professionals and healthcare students and there has been much discussion and debate about possible causes and problems that result. There has also been a great deal of research related to its prevalence and its impact. However, in the absence of any clear strategies to prevent or 'cure' the problem, further investigation is warranted. The key areas for further exploration are the causes of numeracy anxiety, in the hope of being able to develop strategies to help prevent it occurring in the future, and strategies to overcome it for those already having to deal with it on a daily basis.

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